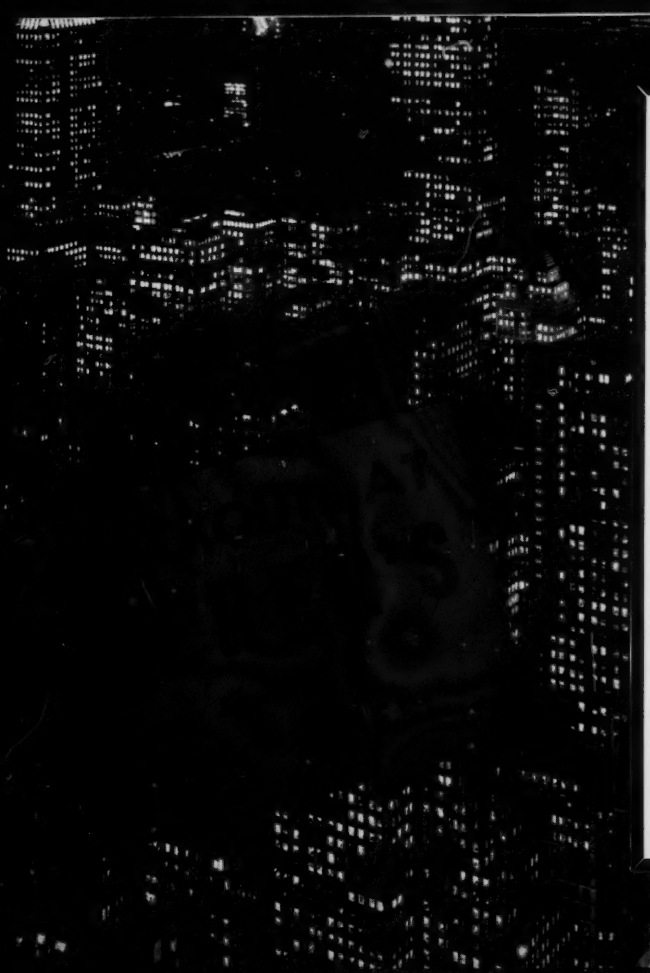
Soap



It's business as usual at Ungerer's.

We have **NO BLACKOUT IN RESOURCEFULNESS.** These trying times test the laboratory technician and the business man to the very limit. Our resourcefulness is lifting many burdens from the minds of our customers.

We have **NO BLACKOUT IN EXPERIENCE.** Our long continuous record of helpfulness through dark day and fair is a particular boon to our customers at this time. There is no substitute for experience.

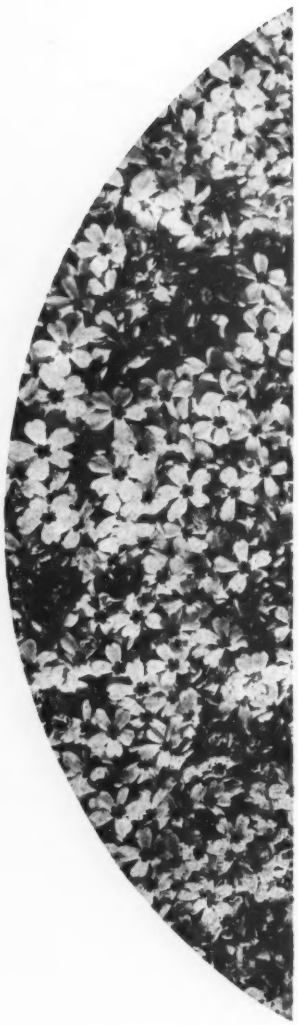
We have **NO BLACKOUT IN ESSENTIAL RAW MATERIALS.** Our business is to supply you with the correct raw materials which fill your needs and solve your problems

so
"There are no blackouts at Ungerer's"
and
"It's business as usual."
Consult us on your perfumery problems.

UNGERER & CO.
13-15 West 20th Street New York

and Sanitary Chemicals

Soap Perfumes



ODOR is perhaps the most important factor in the successful merchandising of toilet soaps. Competition being what it is today, the up-to-the-minute soap manufacturer is insisting on the very best possible perfume available, at a price within reasonable limits.

Our laboratories, based on the long experience of our suppliers Chuit Naef & Cie., Geneva, Switzerland, are turning out remarkably fine floral and bouquet odors for toilet soaps at surprisingly low figures.

Included in our most recent successful developments are GARDENIA, JASMIN, GERANIUM, LAVENDER, LILAC, FOUGERE, BOUVARDIA, MUGUET, ROSE, DAMASCENA, and numerous bouquet types.

Samples and Quotations on Request

Firmenich & Co., Inc.

135 FIFTH AVE., NEW YORK

CHICAGO OFFICE: 844 NORTH RUSH STREET

Soap and Sanitary Chemicals

Reg. U. S. Pat. Office

Volume XVI
Number 1

JANUARY
1940

SANITARY Products Section, which forms a part of every issue of SOAP, begins on page 71.

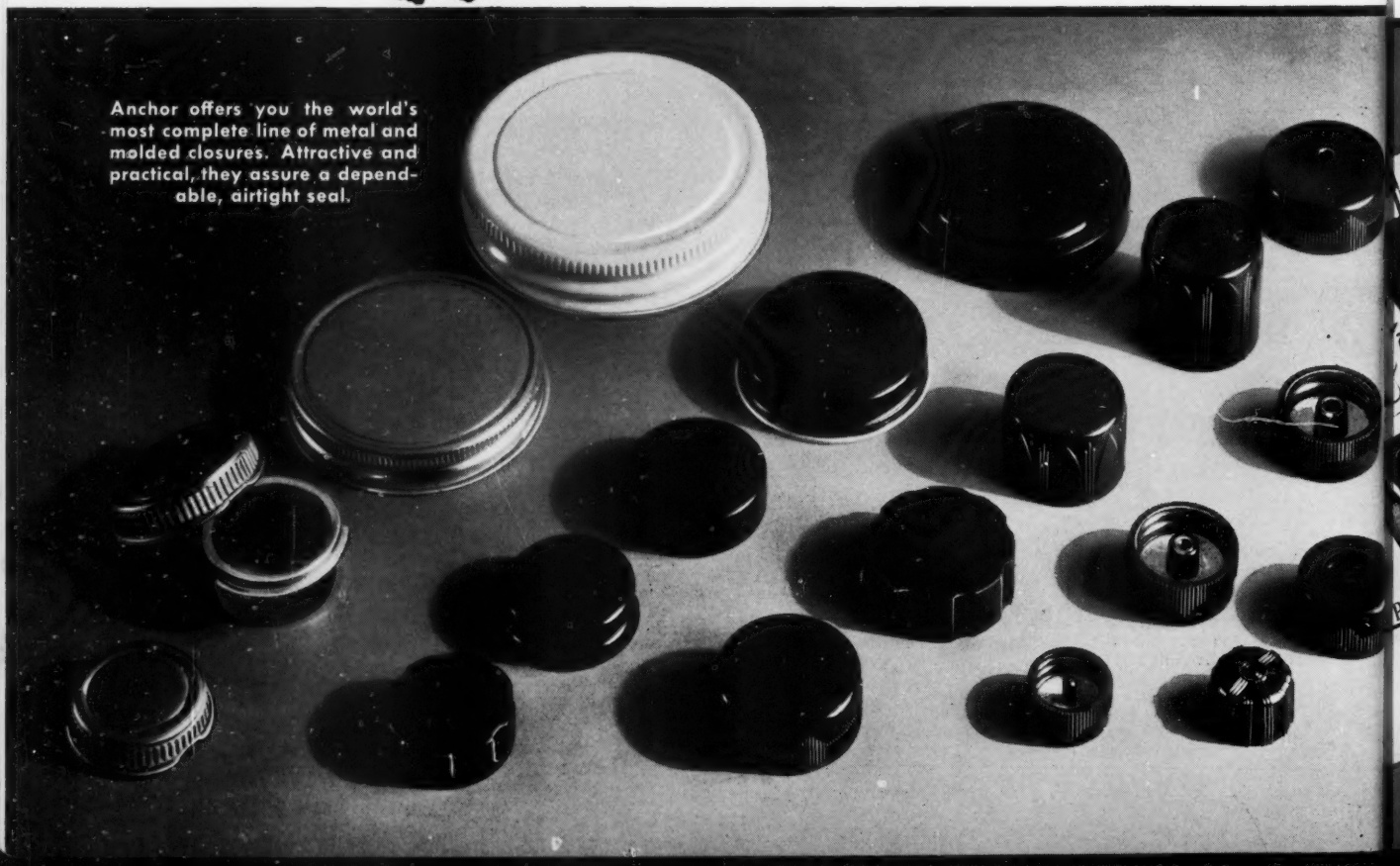
Contents

Published by

MAC NAIR-DORLAND COMPANY, INC.
254 WEST 31st STREET NEW YORK, N. Y.

Subscription rate, $3.00 per year. Foreign, including Canadian, $4.00. Copy closing dates—22nd of month preceding month of issue for reading matter and 10th of month preceding month of issue for display advertising. Reentered as second-class matter, Feb. 9, 1938, at Post Office, New York, under act of March 3, 1879. Mail circulation, December, 1939, issue, 3,933 copies. Total distribution, 4,500.

COMPLETE RESPONSIBILITY



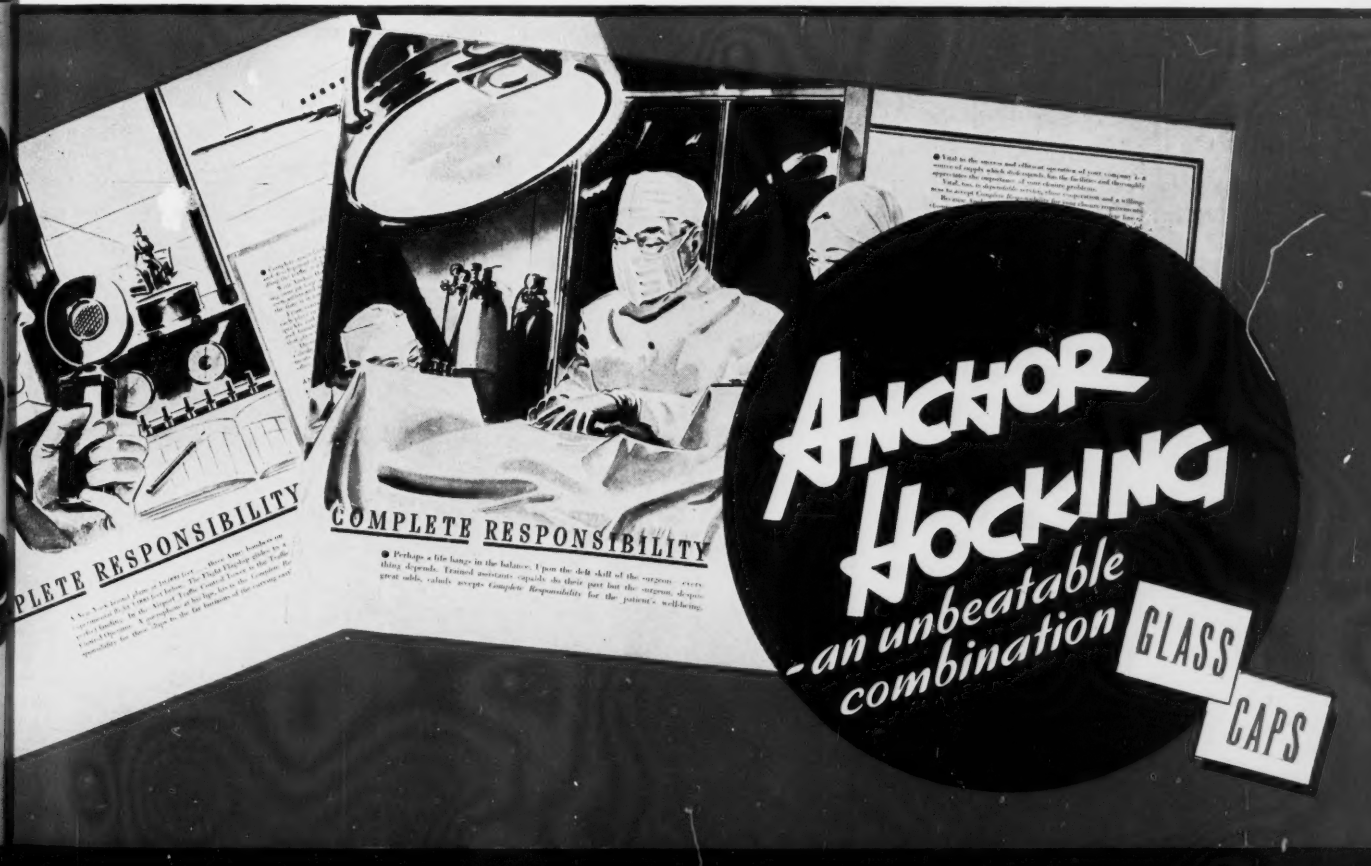
In Anchor Hocking's line of drug containers you are sure to find a container or a family of containers that will most completely satisfy your packaging requirements.

ANCHOR HOCKING is thoroughly reliable, equipped and capable of accepting *Complete Responsibility* for your packaging requirements — from container, to closure, to carton. Ours is a service organization offering a complete line of containers and closures.

At Anchor Hocking, backing up the salesman who calls on you — is every modern facility for serving you better. Experts on every phase of packaging . . . research, engineering, designing, and merchandising experts, are at your beck and call. These services are yours without the slightest obligation. May we discuss your packaging problems with you?

ANCHOR HOCKING GLASS CORPORATION
Lancaster, Ohio

Closure Division: ANCHOR CAP & CLOSURE CORPORATION,
Long Island City, N. Y. and Toronto, Canada



Products

Liquid Soap Dispensers
Liquid Soaps & Bases
Oils, Soaps, & Liquids
Disinfectants
Insecticides
Waxes & Polishes
Deodorizing Blocks
Containers
and Allied Products

A life-long dream has been realized. Key-men throughout the country answered the AMPION call to Service. Scores with *real* experience were interviewed and the choice men selected. This Guild of Chemists and Technicians working side by side in our new spaciously modern plant can truly answer our exacting demands for Quality, Accuracy and Efficiency.

That's the reason the New AMPION Corp., is "Stepping Out In 1940".

Mr. Leonard Schwarcz, formerly president of the Clifton Chemical Co., is now President and Chairman of the Board of Directors of the AMPION Corp.

AMPION Corporation

4-88 Forty Seventh Ave. Long Island City, N. Y.

A NOVEL WAY TO SAVE MONEY

This old-fashioned mechanical bank, from a private collection, is called "The Darktown Battery". A coin is placed in the pitcher's hand. When a lever is pressed the pitcher throws the coin. The batter misses and the coin goes into the catcher's mitt which contains an opening to the bank.

THERE'S MORE THAN ONE WAY TO SAVE ON CHEMICALS, TOO!

Cyanamid's technical service is one of the many factors that help you save in buying chemicals for soap production. Make Cyanamid your headquarters for...

TETRA SODIUM PYROPHOSPHATE	CAUSTIC SODA	SULPHURIC ACID
TRI SODIUM PHOSPHATE	K. & M. MAGNESIUM CARBONATE	ZINC STEARATE
ALUMINUM SULPHATE	K. & M. MAGNESIUM OXIDE	AEROSOL* WETTING AGENTS
SODA ASH	MURIATIC ACID	WAXES

*Trade-mark of American Cyanamid & Chemical Corporation applied to wetting agents of its own manufacture.

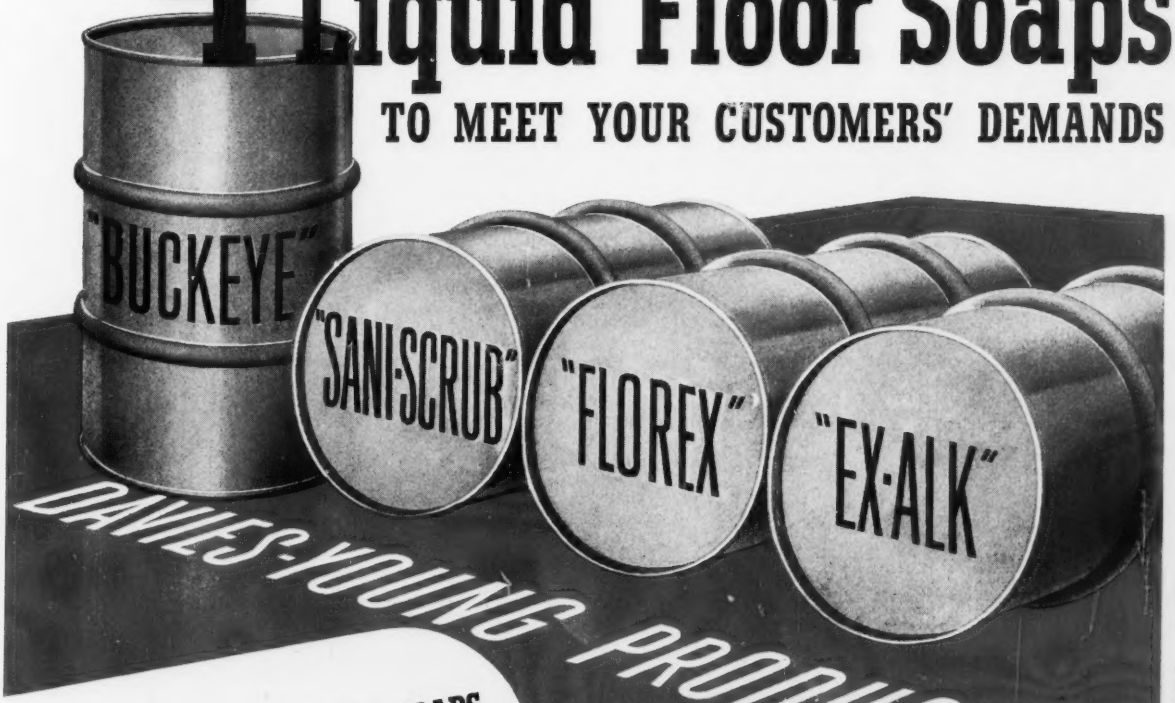
American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

Build Business on Quality Lines . . .

4 Liquid Floor Soaps

TO MEET YOUR CUSTOMERS' DEMANDS



BUCKEYE LIQUID SCRUBBING SOAPS

(Plain, Pine or Sassafras.) For all surfaces that require a good NEUTRAL soap. Made from a combination of freshly pressed vegetable oils. Contain a high concentration of soap value. Leave no film on terrazzo or tile.

SANI-SCRUB LIQUID FLOOR SOAPS

(Plain, Pine or Sassafras.) Heavy-bodied liquid scrubbing soaps containing a slight excess of a modified alkali. Developed particularly for rubber, rubber tile, asphalt tile, composition, mastic and cement. Slight alkalinity not only gives increased cleaning action—but also prevents colors from running.

FLOREX (Pine or Sassafras)

Really a liquid detergent; carries a slight excess of modified alkalies. Lower in soap content than SANI-SCRUB; recommended for same type of floors.

EX-ALK LIQUID CLEANER

(Pine or Sassafras.) For all floors, and general purpose cleaning. It is non-alkaline, and neutralizes alkali, thus controlling the alkalinity of the cleaning solution. Heavy suds clean with gentle, thorough action, harmless to any surface that will stand washing with clear water.

Liquid floor soaps (scrubbing soaps) are widely used today because of their ease of handling, immediate and complete solubility in water, and effective cleaning properties. These four Davies-Young soaps are each specifically compounded for certain types of floors. (Buildings having more than one type of flooring often require several different cleaners to maintain them properly and economically.) Build up your business by recommending and selling *the right cleaner for the right surface.*

MAIL TODAY FOR SAMPLES AND PRICES

The Davies-Young Soap Co.
Dayton, Ohio

Please mail samples and prices of your Four Liquid Scrubbing Soaps.

NAME _____

ADDRESS _____

CITY AND STATE _____

THE DAVIES-YOUNG SOAP CO.,
DAYTON, OHIO SOAPS FOR EVERY PURPOSE; FLOOR WAXES, SANITARY SUPPLIES

The refreshing scent of Pine Forests has always held an appeal to the public.

A Pine Soap or Bath Preparation so perfumed recalls vacation days. Gives a sensation of cleanliness and health.

For exquisite Pine Odors for Soaps and Cosmetics, the following are ideal bases:

ISO BORNYL ACETATE
PINE BOUQUET No. 1188
PINE BALSAM No. 2728

AROMATICS DIVISION

GENERAL DRUG COMPANY

170 Varick Street, New York, N. Y.
Transportation Bldg., Los Angeles, Cal.
9 South Clinton St., Chicago, Ill.
907 Elliott St. West, Windsor, Ontario

The Paradox of Soap

or the mystery of the

TAR ACID - WATER INTERFACE

As soap manufacturers, we were long ago attracted to the disinfectant field. We found some strange things.

1—Soap can make a disinfectant raw material potent.

2—Too much soap can ruin a disinfectant.

Some times negative results in a scientific experiment are of value. We took a Tar Acid chlorinated base with an estimated phenol coefficient of 100. We made a compound using 3% of Tar Acid and 30% soap and had it tested by the F.D.A. Method. Instead of a coefficient about 2, the result was a coefficient of *nil.*

We infer the following theory on disinfection as derived from the above.

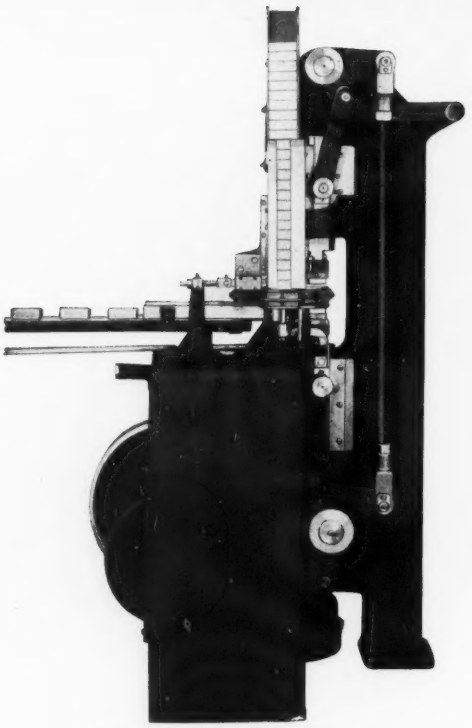
Ordinarily, soap emulsifies the active disinfecting ingredients in such a way as to expose the polarized phenolic molecules to the surface of the bacteria—and they perish.

When too much soap is used, the phenolic molecules are enveloped by the soap molecules, and the only polarized groups are fatty acids. Fatty acids are comparatively inert to bacteria, so the surface action on them is useless—and they survive.

This experiment is just one more demonstration of the essential point that it's the "know how" that is most important in turning out good products. The finest materials and the best of intentions aren't enough if your practical manufacturing background has any loopholes in it. Here at Clifton there aren't any such blind spots. We have the technical skill and the practical manufacturing experience as well. Get in touch with us the next time you are in the market for disinfectants, potash soaps, insecticides, deodorizing blocks, soap dispensers or other items in the sanitary chemical line.

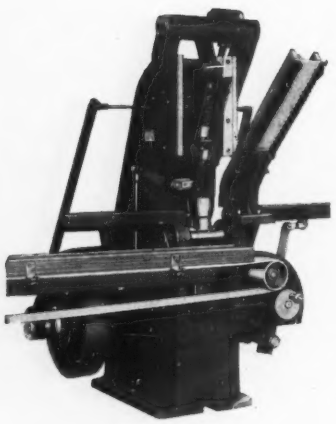
Avoid . . .

wear and tear on dies, die repairs, replacements and marred cakes . . . assure greater output . . . perfect pressing . . . smaller power consumption . . . noiseless . . . vibrationless operation by replacing older models with the new Toggle Type.



Type ET Toilet Soap Press

JONES SOAP PRESSES



TYPE G

Toggle Operated Press for Pin Die Work

which produce much finer, more saleable toilet soap. The long dwell of dies on the cake effected by JONES' new toggle presses means a beautifully finished cake impossible to produce on older models.

Modernize your soap pressing and cut costs with JONES' new toggle presses.

Jones' Presses used the world over. Wherever soap is used on this earth it is the product of Jones' automatic presses.

R. A. JONES & CO., Inc.

P. O. Box 485 Cincinnati, Ohio

The Standardized *Constant Motion Cartoner* packages, bottles, jars, tins, collapsible tubes and many other articles. It feeds, folds and inserts direction sheets and corrugated board liners with the loads.

As the Editor sees it..

AS FAR as shaving creams and shampoos are concerned under the federal Food, Drug & Cosmetic Act, a recent unofficial expression of opinion from Washington may help to clarify the situation. If the word, "soap," is included in the title of the product, and such product is essentially saponaceous, it is exempt from the provisions of the new federal law. This is the view expressed recently by a prominent official of the Food & Drug Administration. But if the title does not contain the word, "soap," it is a cosmetic and subject to the law. In short, "shampoo" or "shaving cream" are cosmetics, but "liquid soap shampoo" or "soap shampoo" or "shaving cream soap" or "soap shaving cream" are soaps.

In the matter of label claims of a cosmetic nature, the Food & Drug Administration evidently believes that they are not a factor under the Food, Drug & Cosmetic Law if the word, "soap," is used in the product name. However, they may be a factor under the Wheeler-Lea Act, which is the business of the Federal Trade Commission, and not something for the F.D.A. to worry about. But, when it comes to claims of a medicinal nature, that is a horse of another color, and such products are classified as drugs whether the word, "soap" appears in the name or not.

This seems to be the essence of the present status of the shaving cream and shampoo controversy. In some respects, it appears that the Food & Drug Administration is itself puzzled and would welcome a test case or two to clarify the situation. Recent seizures of prominent shampoos and shaving creams will undoubtedly develop into these desired test cases. In the meantime, manufacturers may be guided to some extent by this expression of opinion from Washington, although they cannot consider it in any sense a final judgment in the matter.

GOING further into this subject of "when is a soap not a soap," the Association of American Soap & Glycerine Producers recently issued some rather good advice to manufacturers. Said the Association: "While no soap products other than shave cream, shampoo has thus far been stated by Department to be involved, nevertheless every make of soap products for hands, hair, face, body, 'sold or represented' other than soap, should scrutinize the Acts and Regulations."

Whether manufacturers agree or disagree with interpretations from Washington, it may be the part of wisdom at this time to check over labels and product designations very carefully. If minor changes can be made which are of no particular importance to the product name or label, but which will avoid conflict with Washington, why not make them? This particularly applies to border-line cases where a few small changes may do the trick. And in studying labels with this thought in mind, a close knowledge of the law and its regulations may mean the saving of much time and expense. This controversy over shampoos, shave creams, dental creams may eventually extend to other products of a saponaceous nature. With this in mind, we join in recommending further close scrutiny of the law and the regulations under which it is being enforced.

IN ITS campaign against deceptive packages, the Food & Drug Administration appears to be turning on the heat. Take those old-fashioned vanilla extract bottles, for example,—those tall flat ones which look like they might hold four ounces, but really hold two. They have been on the market since Hector was a pup, and no-

body that we know ever really got excited about them. But now, it's different. Under the new Food, Drug & Cosmetic Act, the Food & Drug Administration is out to drive them off the market as "deceptive packages." And besides vanilla, everything else where the container appears to hold more than it really does, is ticketed for attention by the F.D.A.

Not only is the Government moving against all packages which "look like what they ain't," but the public is being urged via radio to call "these deceptive packages" to the attention of the F. D. A. The public is also being advised to "read all labels carefully." This is sort of funny, this label advice, inasmuch as manufacturers have been trying to get the public to do the same thing for years without much success. Maybe the F.D.A. can succeed where fifty thousand manufacturers have failed.

Now, we all know that this drug law enforcement is a serious business. We also know that the Government has the law and the means to enforce it. But at the same time, we feel that ninety per cent of the violations are violations of ignorance and not of intent. Consequently, we urge that the severity of its enforcement be tempered with charity and good common sense. Knock off the flagrant violators first, and consider above all the public interest in going after all violators. This policy of practical common sense has been followed successfully in the enforcement of some laws, and it can be followed in enforcing the new Food, Drug & Cosmetic Act. For can there be a government official in the world today who does not know that for years the most widespread public criticism of law enforcement has been that it too often "strains at a gnat, and swallows a camel?"

JUST how much of the increased industrial activity of the past four months has been due to the war abroad is difficult to estimate. But what is more important to American industry is the question of what will happen if hostilities in Europe terminate, suddenly or otherwise. If the fighting ends during 1940,—and we sincerely hope that it will, but at the same time, fear that it will not,—there is reason to believe that all markets, both for raw and finished materials, will be seriously upset. Economic authorities, including our own Secretary of Agriculture, foresee something akin to a collapse of commodity markets upon the end of hostilities whether it be next year or several years hence.

On the other hand, with anticipated increases in American payrolls in 1940, the expectation is for good business generally. But even with this assurance, manufacturers are not too certain about it. Bluntly, they still have no more faith in our governmental set-up in Washington today than they had five years ago. Their activities are characterized more by caution than by confidence. But, with all this, 1940 should be a good year.

SOUTH America is not the market which it used to be for American soaps some years back in spite of a recent spurt in exports. The countries of Latin America have become very much "make-your-own-soap" conscious since 1932 or 1933. Tariffs, plus various and sundry financial difficulties, have done much to shut out foreign soap from that market. As a consequence, the manufacture of soap in Latin America has shown wide expansion. American soap makers have done much in teaching modern methods in both old and new Latin American plants. Some soap machinery to equip these new plants has come from the United States, but the bulk of such equipment during the past few years has originated in Germany. Direct barter arrangements and willingness to extend more liberal credit terms by German machinery manufacturers were chiefly responsible. On this basis, the German machinery was considerably cheaper, although it is reported that the Latin American soapers prefer American equipment. But with German trade now shut off from the South American republics, they have turned to American manufacturers to supply the needs of their growing industry. Which as a recent communication from Brazil points out, is only one of the many effects of "Hitler's folly" in the Latin American market.

COLD PROCESS SOAPS

By J. M. Vallance

AS DR. H. K. DEAN remarks in his treatise on the "Utilization of Fats," although the cold process is an old method of producing soaps, it has lately experienced something of a revival and is especially suitable for preparing toilet and shaving soaps where the presence of glycerine is an asset. Its use naturally depends upon the state of the glycerine market, and in times of glycerine shortage, the method cannot enter into consideration. In Germany, for example, its use has for some time been forbidden, except in cases where fatty acids are utilized in place of fats.

Popular types of cold process soap in the United Kingdom are castile, white windsor, marine or salt water and straight-forward toilet soaps; specially medicated soaps containing mineral salts; shaving soaps, pumice soaps, certain kinds of floating and transparent soaps; and a considerable variety of cheap, filled soaps intended for general household purposes. Some of these soaps are superfatted, and most of them contain other fats in addition to coconut oil. Some, again, are by preference made by the semi-boiled process, which although essentially similar to the cold process, enables a wider variety of raw materials to be employed and also offers the soap-maker the advantage of correcting an unevenly balanced batch before dropping it into the frames.

It is proposed in the following discussion to offer observations and suggestions on various aspects of cold process soap manufacture. The process itself will not be described in detail, in view of the fact that such procedure is quite generally known and widely described throughout the literature, — any reader interested being recommended to consult Thomssen & Kemp's "Modern Soap Making."

Cold process soaps are often said to be the simplest of all soaps to make, but while the method itself is simple enough, there are many traps in this branch of the business for the unwary and inexperienced. The chief advantages of the process are as follows:—much less elaborate

plant required than for boiled or milled soaps; a saving of time, steam and labor; rapid turnover of raw materials; and the possibility of including large amounts of mineral salts etc., should the latter inclusion be desired.

As against all this, the cold process soapmaker is obliged to use only the very best grades of raw materials. He cannot recover the glycerine, which is of course left in the soap, and, unless he has become adept in the art of making a good cold-made soap, he will be faced with such problems as incomplete saponification, dirty or discolored soap, rancidity, perfuming and coloring difficulties, and the task of disposing of considerable quantities of scrap. It is in an attempt at minimizing these potential losses that the ensuing comments will be devoted.

In the first place, the selection of satisfactory raw materials must be given the very closest attention. Oils and fats must if necessary be cleaned and bleached before use. In addition, they should be of the purest and freshest grades obtainable. Formerly only coconut and palm kernel oils were commonly saponified by the cold process, sometimes with a small proportion of olive or castor oil, but nowadays, in addition to these, use is made of tallow, lard, cottonseed oil, best quality bone fat, peanut, sesame and palm oils, and also high-grade rosin. The addition of up to 5 per cent of mineral oil to the fat charge has been claimed to improve the resulting texture, although personally I do not agree with this view.

Best mutton tallow of free fatty acid content of less than 3 per cent may be used. Also similar high grades of coconut oil. Up to 2 or 3 per cent f.f.a. is permissible, in fact the presence of a little fatty acid is probably an advantage, as this combines immediately with the caustic alkali, to form a small amount of soap which in turn acts as an emulsified and facilitates the necessary intimate mixing. Emulsification of a perfectly neutral oil is sometimes difficult, and it is for this reason that the addition of small proportions of emulsifying agents has been suggested, those proposed including yeast, casein and sulfo-products. During 1934, laboratory experiments on these lines led to the discovery that the addition of 0.6 per cent of ordinary soap (reckoned on the fat charge) in solution form, resulted in a marked increase in the speed of saponification.

However, when the free fatty acid content of the oil charge is excessive, granules of soap grain out, occluding oils and lye, causing lack of homogeneity and the formation of lumps. This condition, known to the trade as "bunching" is frequently the cause of severe defects in the finished soap, rather similar in character to the "splitting" or separation of badly made face cream emulsions. Owing to the rapidity with which free acids are neutralized by caustic soda, the damage occurs right at the beginning of the process and even if the soap so formed is present only in traces, unwelcome phenomena such as grittiness and discoloration may occur. The only real solution to this problem is to confine one's attention to the highest grade fats and oils or else to pre-treat them with a little soda ash and salt before use, skimming off the pure fat after allowing the soda and free fatty acids to react and sink to the bottom of the kettle.

Above all, when working with the cold process, it is essential to remember that there is no possibility of removing color, odor or foreign material once saponification has taken place. Fats should therefore be freshly melted and strained before use. It goes without saying that the caustic alkalis also should be of standard high grade, as free as possible from heavy metals, solutions being made up fresh by dissolving in an iron tank with welded seams and reducing to the required density in a similar type of tank. The fact should here be noted that it is often found desirable to use a small proportion of caustic potash as well as caustic soda, in the manufacture of cold-process soaps, as this tends to improve the texture and appearance of the finshed product.

In the United Kingdom, the customary way of making a coconut oil soap has hitherto been to treat it with about 6 per cent less than the weight of alkali actually required by the saponification value (i.e. 50 per cent of its weight of 38° Be caustic soda lye.) This naturally gives an incompletely saponified soap, but the unsaponified fat is probably present, not as ordinary tri-glycerides, but as mono- and di-glycerides. This means that in practice there is little if any difference between the lathering powers of a fully saponified coconut soap and a not quite completely saponified coconut soap made by the cold process. Obviously, therefore, the undesirability of incomplete saponification does not always apply.

In general, straight coconut and palm kernel oil soaps are irritant to the skin, unless superfatting agents such as lanolin and the like are also incorporated. For this reason alone there is a tendency to include other fats and oils in the charge, and to carry out saponification as completely as possible.

TEMPERATURES play an important part in soapmaking by the cold method. Thus if the fat charge is too hot when the lye is added, complete emulsification often becomes impossible and the resulting soap is grey and unattractive. On the other hand, if the temperature is to low, the fats tend to solidify when the lye is added and the mass becomes too thick to work effectively. In the latter case, a little hot water may be added and vigorously crutched in until a smooth emulsion results, but obviously such water should not be added to excess.

Different combinations of fats and oils call for different working temperatures. Where, for example, a mixture of three parts of tallow to one part of coconut oil requires a temperature of about 105° F., a soap compounded of all coco-

nut oil will work comfortably at 90-95° F. It is impossible to lay down hard and fast rules for the temperatures of mixed stock, as the mean solidifying point of two fats is seldom the solidifying point of the mixture. The two examples cited should, however, give an indication of the requirements.

Another factor to be taken into consideration is the addition of filling materials. This necessitates an adjustment in the temperature of the mixed fats, the process being worked at a somewhat higher temperature, in order to counteract the cooling effect of the filling agents.

It sometimes happens in cold weather that the congealing of the mass in the kettles gives the appearance of soap formation, with the result that the mass is prematurely filled off into the frames. Crutching with a hand crutcher in a warm room may in certain instances complete the process, but what is really needed is a jacketed kettle heated by water, steam or electricity. Such kettles are also useful if the mixing temperature proves to be too low.

The framing temperature is of particular importance, for the process begun in the kettle or crutcher is completed in the frames. It is therefore necessary to keep the mass in the frame warm for about 24 hours, this being accomplished either by wrapping the frames in woolen bags or sacks, or by wheeling them into a room kept to a constant temperature of 105-110° F. Afterwards, the frames may be allowed to stand for a further day or two at ordinary room temperature. If the framing temperature falls too low, a trough will form in the top of the soap, thus undesirably increasing the amount of scrap and wastage. If, on the other hand, the soap gets too warm in the frames it will either separate oil and lye or the surface will exhibit the phenomenon of "bowing." The contents may then be stirred with a wooden paddle or, in worse cases, the outside of the frames may be cooled with water.

THE problem of framing temperatures automatically gives rise to a consideration of the size and shape of the frames. To my mind, this is one of the most important subjects for discussion in so far as the cold process is concerned. Apparently British soapers are in the habit of using rather smaller frames than their American contemporaries. In any case, it is not considered advisable in the U.K. to exceed a capacity of 224-280 lb. for a cold-made soap frame. This is considered in many quarters to be the absolute limit for satisfactory working, for with larger frames there is an increasing danger of excessive heat development. For the same reason, a frame that is too small may lose heat very rapidly, unless it is well wrapped up or kept into a warm room. To qualify the foregoing statement, I must add that I have seen considerably larger frames than the 2½ cwt, kind satisfactorily employed for certain cold-made soaps, although there is no doubt that the smaller frames are generally to be preferred.

Typical British frames are constructed of birch, pitch pine or other hard wood, the inside measurements usually being 18½ in. by 22½ in. deep, lined with steel plates ⅛ in. thick. The sides and ends are detachable from the base and from each other, and they are grooved to fit together perfectly, giving an almost watertight finish that is further strengthened by means of clamps and tie-rods. Cracks are usually stopped up with yellow soap paste or melted soap scrap, prior to the filling of the frames with the cold-made soap mass. Close-fitting parchment bags have also been suggested for their general utility in lining the frames.

About two years ago I was asked to advise on complaint received from a soap firm, regarding the development of "bowing" in the frames. Not only was this firm working the fats at a temperature considerably in excess of what was actually required, but in addition, they were using extremely large frames. A drastic reduction in the processing temperature and in the size of the frames quickly brought about the desired result, and the finished soap showed moreover a considerable improvement in uniformity and smoothness of texture.

A successful departure from the conventional was the installation in a modern British factory of tubular tin-coated iron frames—oval in section and corresponding to the surface area of the finished soap cake (allowing of course for trimming and pressing). The length of these tubes is about 6 ft., and they all fit neatly into a drying rack in a specially heated room, fitted with a temperature controlling device. This idea has proved perfectly satisfactory in practice, and has the advantages of being clean, labor-saving and scrap-preventing. The usually heavy loss caused by the accumulation of scrap is kept in fact to a bare minimum, in addition to which much of the labor entailed by slabbing, cutting and heavy pressing is eliminated. Incidentally, it was at first proposed to use monel metal for making these unusual frames, but the cost proved to be somewhat higher than was anticipated. Accordingly tin-plated tubes were installed, the process of re-tinning being carried out as and when necessary.

PHENOMENA of oxidation, such as discoloration and rancidity, are best prevented as far as possible, at the outset, by the careful selection of high-grade raw materials. Nevertheless, it is sometimes considered advisable, if not actually necessary, to incorporate a suitable antioxidant. The most commonly used materials in this connection are sodium chloride and sodium hyposulfite. Certain writers have recommended the addition of derivatives of benzoic and p-hydroxbenzoic acid, but all tests go to show (cf. Gershenfeld and Perlstein's paper on gelatin preservatives, *Amer.J.Pharm.*, 1939, 111, 277) that these products are effective chiefly in acid media. Thymol, together with its isomers

and essential oils containing them, should however, exert a favorable influence in this respect when incorporated in cold-made soap perfumes. The utility of stannous chloride was referred to at some length in a previous contribution of mine ("Soap Discoloration: Its Avoidance," *Soap*, March, 1939.)

Common salt, in the proportion of one per cent or less, has been widely employed as a preservative for coconut and other cold process soaps, but it does of course tend to give a brittle soap, unless 1 or 2 per cent of rosin or superfatting agents such as lanolin, mineral oil or refined sperm oil are also incorporated. As Dr. E. G. Thomssen has remarked, "sodium hyposulfite solution has been found to be as effective as any preservative which can be added."

One method of utilizing "hypo" is to dissolve 25 lb. of it in 17½ lb. hot water and to use about 7 oz. of this solution to every 100 lb. soap, the addition being made at the same time as the filling, coloring material and perfume are incorporated. Acid perfume oils, which set free a greyish deposit of sulfur, should not be employed in conjunction with hyposulfite. Contact with iron is also to be avoided, the solution itself being prepared in a vessel made of glass—lined or other resistant material, then stirred with a wooden paddle and strained through a close-mesh cloth.

The part played by rosin would appear to vary in accordance with the grade and quantity employed. Thus a small percentage of rosin is widely believed to inhibit the onset of rancidity, while the use of inferior rosin in a white soap, or the use of an excessive amount, is likely to cause darkening of cold-process soaps by reason of surface oxidation of the colophenic acids present. In fact, heavy proportions of rosin are sometimes deliberately incorporated, in order to give a brown soap of the Brown Windsor type. In the same category is the addition of about one per cent unbleached palm oil to the fat charge of a filled cold-made soap, the latter then bearing a superficial resemblance to the familiar yellow household soap. Care should be taken, in this case, to ensure that the palm oil contains the absolute minimum of free fatty acids, as otherwise bright yellow spots will form and thus ruin the batch. Incidentally, if a high proportion of rosin is employed, the semi-boiled variation of the process is desirable, the fat mixture then being run into the lye to avoid the formation of lumps.

Reverting to the avoidance of discoloration, reference may be made to U. S. Patent 2,078,726, assigned to Best Foods Inc. of New York. This aims at the prevention of the characteristic progressive yellowing of cold-made soaps (i.e. those based on coconut and palm kernel oils) by the utilization of partially hydrogenated oils of the same type, the degree of hydrogenation being just sufficient, for example, to reduce the iodine number of coconut oil from 9 to 8 or that of palm kernel oil from 17 to 15. By this means, it is claimed, the yellowing effect is substantially inhibited. I would mention in this connection that I have kept tablets of cold process soap, based largely upon coconut oil, for three or four years on end, without being able to detect any yellowing or other defects, except that the soaps are apt to bead out moisture with changes in atmospheric conditions, due to the hygroscopic nature of the glycerine which still remains in the soap. In any case, yellowing of this kind may to a marked extent be inhibited merely by wrapping the soap well and keeping it away from the light.

According to A. W. Keeble and C. H. Miller, the cold process proved to be unsatisfactory for many reasons. Among them is the incompleteness of saponification resulting in excess alkalinity or rancidity, depending on whether alkali or fat is in excess, and the difficulty of reproducing previous results. In a new method evolved by these workers, soaps are prepared under similar conditions, but rosin mixtures which have been heated and then cooled are quickly introduced into the fat-alkali mixture. Thus a well-stirred mass is prepared, consisting of 170 lb. of palm kernel oil and 9 gallons of a 36° Be caustic soda solution; 6.5 gallons of another mixture are also made up, containing equal proportions of the oil and rosin. The oil and rosin mixture is heated to 250° F., cooled to 110° F., and then quickly introduced into the first mixture. After stirring for 10 seconds, the soap is run out through a valve in the bottom of the mixing vessel and then treated in the usual manner.

The incorporation of rosin in cold-made soaps is also interestingly referred to in British Patent 432,227, assigned to E. H. and C. W. Taylor. According to this, cold process fat-rosin soaps are made by treating fatty matter with just sufficient alkali for saponification, treating a mixture of rosin and fat or oil with alkali sufficient to saponify only the rosin, mixing the two products, and adding alkali to saponify the surplus fat. For example, 100 lb. of palm kernel oil is stirred rapidly with 4.5 gallons of 36° Be caustic soda for 10 to 15 minutes; 4 gallons of a melt of rosin in an equal weight of palm kernel oil is treated at 110 to 135° F. with 0.5 gallon of 36° Be caustic soda. The products are mixed, and immediately one gallon of 36° Be caustic soda is added and the mixture stirred for a few seconds and run quickly into the frames, where it sets and saponification is completed. Color and perfume, filling materials and preservatives may be added.

(To be Concluded)

—— ♦ ——

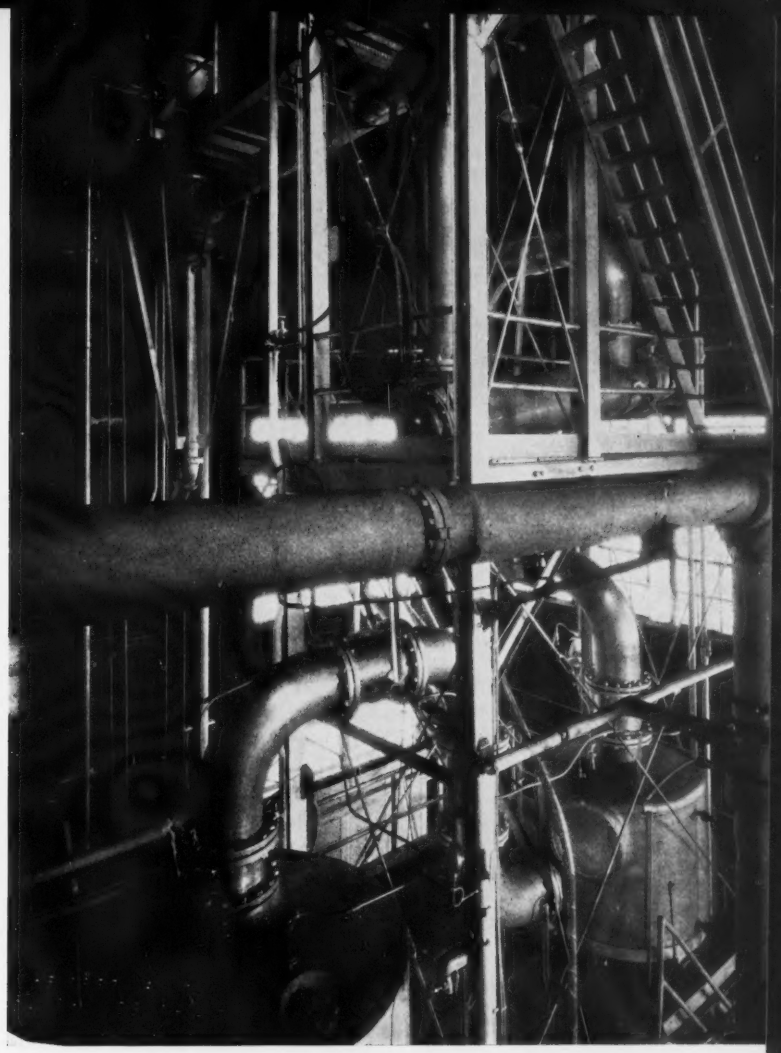
Wetting agents are composed of salts of sulfonic acids having capillary activity, mixed with ammonium bases containing an aliphatic, cycloaliphatic or araliphatic group having a chain of medium length. Examples are (1) sulfonated oleyldiethylamide mixed with a product obtained by reaction of diisopropylbenzyl chloride with trimethyl amine, (2) dibutyl naphthalene sulfonic acid mixed with isoheptyltrimethylammonium methylsulfonate. I. G. Farbenind. A.-G. French Patent No. 839,653.

BLOCKED PIPE LINES

What to do about them

By C. R. Kemp

J. R. Watkins Co.



NOT only soap itself, but most of the raw materials used in its manufacture are solids at normal temperatures,—tallow, palm oil, coconut oil, greases, all must be heated to render them fluid. It is no wonder then that considerable trouble is encountered in soap plants, particularly in cold weather, as a result of blocked pipe lines. Add to the list of the foregoing raw materials such things as high gravity caustic soda solutions which solidify in cool or cold weather, and soap in the hot liquid state which solidifies at room temperature, and this comprises a list of real trouble-makers unless properly handled.

The cause of blocked pipe lines may be accidental, due to inadvertence or possibly poor or improper construction. Where blocking is due to poor design or construction, the obvious thing to do is remedy the defect by rebuilding or rearranging. Inadvertence should not long be tolerated, but accidental blocking will occasionally happen. When the time comes to clear up a blocked pipe line, then can be appreciated the care and thoughfulness given to the original construction. For example, how much better it is when constructing a turn of 90 degrees to use a tee with a plug in one end instead of an ell. By removing the plug, access to the inside of the line may be had for inspection, or as a point of operation.

Frequent use of flanges instead of couplings will assist greatly if and when it should be necessary to remove a section of the pipe line. The use of "bleeders" on steam and water lines serves a good purpose, but most be considered generally dangerous where fats, soap and alkalies are handled. Great loss and damage could result if, for instance, a valve on a tank or kettle should become defective and allowed the liquid to enter a pipe line which had an open bleeder on it, especially in remote locations or during hours when workmen are not present. A possible exception to the above concerning construction of pipe lines would be those lines for handling caustic soda solutions. Experience has shown that a heavy pipe with all connections welded is the best arrangement for this type of equipment.

Now examine some of the methods employed in freeing a pipe line when it has become blocked, due to the solidifying of some of the materials mentioned herein. To those of us who are accustomed to having available up-to-the-minute facilities, some of the methods mentioned will seem crude, but the writer hastens to assure you that there are places in

these United States, where it is necessary to apply some of these methods. From long of experience, he knows!

The most frequently used method is to apply heat to the outside of the pipe line in order to melt at least a portion of the solidified material. When sufficient heat has been applied, then pressure is applied to one end of the blocked line, the other end beyond the obstruction of course being open. The pressure applied may be steam, hydraulic, air or even mechanical. Sometimes due to lack of facilities or personal preference, the sections containing the solidified material may be taken down and the hindrance removed by melting or it may be taken out mechanically. There may be conditions that will suggest or permit the removal of the obstruction by gaining access to the section affected, by the removal of a plug. This of course will permit the workers to avoid taking apart the pipe line.

As mentioned previously, the application of heat is probably the most frequently employed method. The manner in which it is applied permits the workmen a wide selection of methods. First, there is the method of using a flame on the outside of the pipe. Here the fire hazard must be considered. However if this is the only means available, then there is to be considered the method of applying the flame. To mention a few, there is the ignition of oil soaked bags bound around the pipe or joint. Flame may be applied by a blow torch, but very little area is covered at a given time by this method. It will do for short sections. The writer has been faced by conditions whereby it was necessary to have a number of laborers hold scoop shovels of hot coals near the pipe line to release the obstruction.

Where steam is available in the position required, the problem becomes comparatively easy. By means of a steam hose, a jet of steam can be directed on the outside of the pipe line. The temperature of steam is of course much lower than a direct flame and more time naturally will be required to do a given amount of work. Condensation of the steam will create a sloppy condition in the vicinity of the work being done, but this can be easily cleaned up later.

If electric current is available then a much quicker, cleaner and safe method can be employed to heat the pipe lines. The writer is not aware of any manufacturer who makes a completely assembled unit suitable for this electric heating method, but a unit that may be easily assembled in the soap plant, is described below. The unit was constructed to fit local conditions, but, since the idea is flexible, it can be made to fit practically any conditions, by using smaller or larger units as required.

A piece of heavy gauge sheet metal about 5 feet long and 6 inches wide was constructed in a form similar to a trough or gutter so that when assembled it would fit over approximately one half of the outside of the pipe line. This form was lined on the inside with asbestos to direct radiation where wanted. Next, four strip heaters each of 500 watts were placed lengthwise in pairs, i.e. two strips in parallel at one side of the middle of the length of the unit, the other two at the other side. The parallel strips were spaced 30 degrees apart. The strips were "hooked up" so that each one was electrically "across the line," of course. The lead lines were of soft duplex cable equivalent of number 10 wire capacity. The current available was 115 volts. Since all panel boards were fused with 30 Amp. fuses, a 25 Amp. fuse was installed in the heating unit.

This brief description, while not giving complete details, should give a good general idea of the unit. Its application is simple enough. All that is necessary, is to place the unit on the pipe line and turn on the current. Move the unit along the pipe as it becomes heated. The heat delivered by this unit compares well with that of a flame but without the dangers thereof, is more convenient, more quiet and efficient than steam, and leaves no wet and slippery floors.

So much for the application of heat. But there remains the further duty of forcing the melted or semi-melted material from the pipe line. If the pipe line is vertical and can be opened at the blower end, it may be possible to remove the obstruction by force of gravity, otherwise some kind of pressure will probable be necessary. Since steam is practically always available, this method of applying pressure is possibly the most often used, but air or hydraulic pressure will be satisfactory. Some method of quick relief of pressure should be available, because the obstruction quite often lets go rapidly, sometimes explosively. A quick opening gate valve or similar appliance should be installed at some point on the pressure side, and a man in attendance to operate it.

In attempting to clear pipe lines of solidified caustic materials, it should be kept in mind that if at all possible, they should be cleared without the application of pressure. Serious accidents can occur from the violent discharge of a line when the obstruction lets go.

Ideas such as "boring" mechanically, forcing of hot rods or "snaking," while appearing good on paper, somehow for one reason or other are not so successful in attempting to create a small opening.

It may be found, that under certain circumstances, it is advisable to install some permanent equipment to deal with pipe line obstructions. Chief among the methods employed for permanent installation is the placing of a small pipe line within a much larger line. This small line is fitted so that it enters and emerges from the large line in tight fittings. If the large line then becomes obstructed, it is only necessary to admit steam to the small line. This method of obtaining internal application of heat is clean and very effective, but of course adds much to the cost of the initial installation and may require occasional attention.

If the installation of pipe lines has been properly accomplished, there should be few excuses for this annoying and costly trouble.

JANITOR SUPPLIES *for Foodstuffs Plants*

MANUFACTURERS of foodstuffs should be among the largest consumers of cleaning materials and sanitary chemicals, and if we are to judge from a recent investigation of this field made by representatives of *Soap & Sanitary Chemicals,* such is the case. In plants given to the processing of foodstuffs, it is only natural that the highest degree of sanitation and cleanliness be sought after. Because the products concerned are foods, more extensive and thorough cleansing is necessary, and the expense entailed both for labor and materials is taken as a matter of course in the factories involved. As a consequence, large amounts of soaps, cleansers, chemicals, insecticides, disinfectants, and allied materials are used annually to maintain the necessary high standards of sanitation.

Among the cleansers and detergents used in greatest tonnage by the foodstuffs industry as a whole are soda ash, caustic soda, sodium metasilicate, and trisodium phosphate. These alkalies, both alone and in various combinations with each other, are used differently according to the particular cleaning job to be accomplished. The study of the extent and variations in their uses was confined to meat packing houses, canning factories, bottling plants, and baking plants largely in the Eastern section of the country. If a report on such a survey does nothing else, it should help to give a slant on the attitude and knowledge of the foodstuffs industry in the purchase and use of its cleaning and sanitation materials, and the reasons why this product or that product is used for any particular purpose.

All branches of the meat packing industry have a long list of highly important cleaning and sanitation problems, chief of which is the removal of grease from floors, walls and equipment. If not removed completely and left to accumulate even in minute amounts, such grease residues would naturally soon turn rancid and present a focus of contamination for all meat products with which they might come into contact. Trisodium phosphate in both hot and cold water is most commonly used for removal of light grease deposits. One smaller packing house, for example, washes its floors and walls every few days with a special trisodium phosphate solution, because according to the purchasing agent for the firm, "it removes the grease and everything else as well." For the most part, trisodium phosphate in varying solution concentrations is used for cement and tile floors, unless the grease accumulations are very heavy. In this latter case, several packers report that they have found

that nothing else is effective but the use of a straight solution of caustic soda followed by rinsing with hot water.

For wooden floors, some walls and other places where strong alkalies are not suitable, the general practice seems to be to use a straight chip soap, apparently the ordinary tallow laundry chip. However, accumulations of soap in crevices and cracks are likely to bring the same difficulty as grease accumulations, eventual rancidity. This is probably one of the reasons,—and cost is another important one,—why the alkaline salts are given preference wherever possible for cleaning operations. Also where grease deposits are appreciable, an alkaline salt solution will cut and remove it, whereas a straight soap solution may not be effective except in very hot water. In the process of smoking hams, for example, the entire interior of the smoke house becomes coated with grease drippings, the only effective means for removing which has been found to be scrubbing with caustic soda solution. The milder alkalies will not do the job.

Rust and corrosion are big problems in the average packing plant and various ways are used to combat them. Utensils and equipment of all sorts, tanks, hand trucks, metal tables, even stainless steel and galvanized equipment, are subject to rusting and corrosion in the constantly wet atmosphere of a packing plant in spite of the greasy nature of the materials handled. Particularly over week ends when the plant is closed for a day or two, does this become a serious problem. Rust accumulates quickly. To prevent this, it is common practice to use a white mineral oil as a coating for all equipment. This is usually applied with a cloth in a thin layer. When work is resumed in the plant, it is simply wiped off, and if any remains it is harmless inasmuch as the oil is tasteless and will not contaminate meats. Neither will it turn rancid.

At each packing house doing an interstate trade, there is stationed an agent of the Bureau of Animal Industry who makes a thorough inspection of all materials and operations throughout the plant. Before any type of cleaning compound, disinfectant, insecticide or deodorant may be used, it must pass the Bureau's approval. White mineral oil must conform to certain standards set up by the Bureau, as must liquid soaps, soap powders and other detergents used. The agent for the Bureau, stationed at each plant, personally takes a sample of everything coming into the plant and sends it to the Bureau's laboratories for analysis. It must be approved by the Bureau before the company may use it.

In this survey, our first contact was with the purchasing agents of the various companies as it is they who know which and how much cleaning compounds are being used. One purchasing agent said that the Bureau of Animal Industry recommended the use of neutral liquid coconut oil soap in washrooms throughout packing houses, because "in soap powder there is too much caustic which might get into the meat products!" For cleaning urinals and toilets, said this same purchasing agent, lye has been found useful. (Perhaps there is some hazy distinction in his mind between "lye" and "caustic.")

Although liquid soap is bought in most cases by the drum, some buy the base in barrels and do their own diluting, while others buy the soap at the concentration used. One plant reported buying a 40 per cent soap and diluting it down to 15 per cent. In a few plants, sweeping compounds are used but in most, they are not. The floors are usually too wet to make a sweeping compound necessary or feasible.

Still another purchasing agent made the statement that the best cleansing agent for use in meat packing and slaughter houses is hot water and live steam. He continued with the statement that no half-hearted cleaning is done in his plant—for if such was the case, the plant would have to be closed up within one week's time, for rancid fats would contaminate everything with which they came into contact. As there is no wholesale shutting down of meat packing plants, it may be taken for granted, if we are to believe the above, that meat packing plants go through their cleaning operations thoroughly with an eye out for the best that can be obtained in the way of materials.

Larger meat packers, in many cases, have their own soap plants which supply their own cleansers. In other plants, they buy cleaning materials in bulk and mix them in the proper proportions desired for certain jobs. According to one plant superintendent, it is only a matter of buying trisodium phosphate, soda ash, metasilicate, etc., and mixing them in various proportions, making the cleansing material as strong or as weak as desired.

In the smaller houses, lack of technical men or laboratories makes it essential for the company to buy its compounds already mixed, for they have little idea as to the percentages of trisodium phosphate that should be mixed with other ingredients to give a compound for a particular cleaning job. These companies, for the most part, must depend upon janitor supply and sanitary chemical manufacturers to supply their needs.

Purchasing agents in packing plants report that they are besieged by salesmen with new cleaning compounds, disinfectants, etc., but are inclined to turn a rather skeptical ear to the usual sales story. They have heard of too many remarkable new products that will magically solve every cleaning problem. When the purchasing agent believes that the salesman really has something worth investigating, he takes a sample and sends it along to the company's laboratory for approval, or if the company has no laboratory, it is often sent to an outside testing laboratory for an unbiased opinion. In the foodstuffs field, sanitation is so highly important that they cannot afford to accept the salesman's enthusiastic, but untested claims.

The control and extermination of rodents also plays an important

part in the maintenance of a sanitary packing house, more so perhaps, than in other types of foodstuffs plants. The various meat packing houses seem to be evenly divided between those who do their own exterminating and those who hire exterminating companies on contract. One company reports that it uses red squill quite effectively in the control of rats, this work being carefully supervised by the Bureau of Animal Industry agent, who makes sure that no chance exists for the squill to come into contact with the meats in the plant.

Several meat packers reported that under contracts with local pest control companies, extermination work at their plants was done twice a month. "No matter how up to date your equipment is," said the purchasing agent for a large company, "rats are always present to some extent. Meat is delivered to us in freight cars, and where is the freight car that hasn't rats? Rodents, as a rule," he continued, "are not satisfied with one piece of sausage or ham, but nibble on a great many and spoil them all. In a case of 100 sausages, 80 may be spoiled, but none of them wholly consumed." Therefore, this purchasing man said, it pays to have the best job of inspection and rodent control possible. "Some exterminating firms come into us looking for our contract at cut prices," he said. "The standard answer to such a sales approach must be emphatically 'No'!"

BOTTLING plants lay greatest stress upon the washing of the bottles themselves, an operation which must accomplish practical sterilization as well as physical cleanliness. The general procedure in most plants is first to rinse the bottles in cold water, wash in an alkali solution and rinse, and then scald with water at or as near the boiling point as possible. Caustic soda is the chief alkali used in this operation. Several years ago, 2 to 4 per cent of caustic soda was being used, but it has been found that effective sterilization can be had by using less caustic at higher temperatures, we were told. Caustic soda solutions used alone, however, do not rinse well, as an alkaline film adheres to the glass surface and is carried over into the rinse tank. Consequently, alkaline salts are added and have the advantage of aiding in rinsing the wash film from the bottle.

Because of its excellent detergent properties, sodium metasilicate has been tried out in some soaker-type washers, but one user reports that this alkali appears to lack the lubricating properties necessary for smooth operation of the machine. However, metasilicate added to caustic soda solutions produces a clean brilliant bottle. For some reason, though, one large bottling plant stated that they used no metasilicate at all, but refused to divulge their reason.

Although caustic soda may be effective in combination with alkaline salts for bottle washing, it cannot be used on many types of bottling equipment due to its corrosive nature. Tin-plated iron and tinned copper are very badly corroded by free caustic soda, and to a lesser degree by soda ash and trisodium phosphate. Sodium metasilicate is the least corrosive to tinned equipment, but on occasion this has also been found to corrode tin. Aluminum is attacked markedly by all alkalies, while brass and bronze are tarnished. To counteract these corrosive problems, many plants are using considerable stainless steel, nickel and monel equipment, as these metals are very resistant to the action of alkaline detergents.

An important factor determining the amount of cleaning materials to be used, said one purchasing agent, is that of local water conditions. The degree and type of water hardness plays an important part not only in bottling plants, but also in all other plants where extensive cleaning is done.

Bottling plants, like meat packing plants, in many cases find it easier and less expensive to buy chemicals and make their own cleaning materials. Along the line somewhere, the manufacturer of cleaning materials appears to have fallen down, but just where, it is difficult to say. The representative of one plant asked "Why should I buy prepared cleaning materials when we have an up-to-date laboratory which determines our cleaning needs and specifies the chemicals to be used? We just buy those chemicals and *throw* them together as we need them." When asked if the plant had any cleaning problems that were difficult to solve, the answer was in the negative!

The exception to the above, however, is found in the smaller plants where the purchasing agent, incidentally, seems to know a great deal more about the product he buys than does the purchasing agent in the larger companies. This is probably due to the fact that these smaller plants have no laboratories to specify and analyze cleansing materials. Here, it is up to the purchasing agent to determine whether the salesman has something of value and whether it will meet the plant's particular cleaning needs. Too often, however, the smaller plants buy materials and then find these materials totally inadequate for the job at hand, according to their statements. This may account for the reason that some manufacturers are gradually turning to the making of their own cleaning materials.

The types of cleaning materials used for walls and floors in bottling plants are similar to those used in foodstuffs plants. In general, varying concentrations of trisodium phosphate solutions are the chief detergents, although straight chip soap is also used to a limited extent. Bottling plants are not affected by the accumulation of grease as are meat plants, and so, have less of a cleaning problem.

More about cleaning problems in the foodstuffs' field in the next issue of SOAP AND SANITARY CHEMICALS *. . . materials and methods . . . purchasing procedure . . . and sales possibilities for janitors' supplies . . . in the bakery, confectionery, ice cream and canning fields, in restaurants and bars.—The Editor.*

The Trend of SOAP PROGRESS

By H. L. Ramsey

PROGRESS in soap manufacture in recent years has been chiefly progress in the chemistry of fatty materials. Other progress in the practical production of soaps and detergents has been largely in the mechanics of manufacture, notably new developments in machinery and equipment. These facts were pointed out some six months ago by P. W. Tainsh, chief chemist of Lever Brothers, Ltd. of Liverpool, and the more thought which is given to them, the more it is realized that they summarize quite concisely the extent of soap industry progress. Such advances as have been made are not so much in the actual soap-boiling process which retains much of its old-time character, as in the improved treatment and preparation of raw materials, particularly the oils and fats, and subsequent soap processing such as milling and the like of the finished soap.

Fifteen years ago, Armstrong and Allen read a paper before the English Society of Chemical Industry which was very appropriately entitled "A Neglected Chapter in Chemistry,—the Fats." But since that time, this chapter of chemistry is no longer the Cinderella of the science, but has advanced to the role of leading lady as Mr. Tainsh has pointed out. Largely as a result of the important work of Hilditch and his associates at Liverpool University, and through the work of several American chemists, the advances in fat chemistry have been very imposing.

The soapmaker is thus enabled, from the better knowledge so acquired of the nature and properties of the fatty acids, to formulate his fat charge in terms of the fatty acids rather than of the whole fats, and thus control more readily the quality of the finished soap. However, it is a little alarming to learn that the number of fatty acids now known to the chemist is about 300, as compared with the paltry 20-30 of fifteen years ago, almost an embarrassment of riches to the conscientious soap-boiler. The much more difficult question of constitution of the complex glycerides in neutral fats, wherein new ground has lately been opened up, is of more importance to the producer of edible fats and margarine than in soapmaking, but many workers have been attracted and considerable progress made.

The three main classes of fatty raw material are (a) tallow and substitutes, (b) nut oils, chiefly coconut and palm kernel oils, and (c) seed oils such as cottonseed, peanut, and soya bean oils. In connection with the substitutes referred to under tallow, the progress made in hydrogenation is worthy of note, for hardened fats of any desired texture or consistency can now be prepared, especially from whale oil. The latter is usually graded into four classes (1) to (4), and so greatly have the methods improved that it is now possible for the floating factory to produce up to 600 tons per day, mainly of No. 1 grade. This enhanced efficiency is due among other things to the adoption of centrifugal oil separators and rotary cookers, whereby oil extraction from blubber is now up to 99-99.7 per cent. Extraction must indeed have improved, since, according to the figures given, 11,369 whales in 1919-20 yielded only 67,890 tons of oil, while in 1937-8 46,039 whales yielded no less than 557,000 tons. The latter figure is about right for oil yield and is about the same or a little more than the yield for the 1938-39 season. What will happen as a result of current whaling activities with war in progress is a guess. Germany which came into the whaling picture back a few seasons will of course not produce the anticipated 80,000 tons of oil this year. Japan for which a similar catch was predicted for the 1939-40 season will probably equal this or exceed it.

In the nut oil class, palm oil and coconut oil, world production of palm oil is now about 500,000 tons per annum, and there is no need to repeat here the rapidly increasing share which the Netherland East Indies and Malaya have in this output in their vastly improved yields per acre, 2 tons and possibly more later on, as compared with the miserable 5 cwts. or thereabout of the African native.

In regard to seed oils, it would seem that the figure given for world production of soya bean oil, 500,000 tons, was much too small. Surely, it should be at least 1,000,000 tons. C. E. Lund, in his recent review (*Soap*, June, 1939) estimated the world production of beans at 12-15 million tons, and assuming a yield of oil of only 10 per cent, that means 1.2 to 1.5 million tons. In view of the comprehensive and up to date nature of that excellent review, it is not necessary to say more at this time on world production of oils and fats.

IN REGARD to fatty acids from hydrocarbons, as is known, this dates back to Schall's German patent of 1884 and much important work has since been done in Germany, and it may be added, also in Russia. It was stated that a large scale plant would be operating in Germany before the end of 1939. In the meantime, soaps and also margarine were reported sold in that country supposedly "made from coal or paraffin." Two of the leading pioneers in Germany, Normann and Schrauth, have just died, and the technical press is paying worthy tribute to their achievements, the former in respect to hydrogenation and the latter in connection with fatty acid synthesis. A particularly good account of their work was given in *Augewandte Chemie*, June 24, 1939.

In England, there is good reason to regard Normann as one of the principal pioneers in fat-hardening, for his original process was adopted by Crosfields, subsequently merged into Levers, and developed in their research laboratories. It was around that process that one of the greatest contests in the history of patent litigation occurred, i.e. Lever Bros. versus Brunner Mond Ltd. In regard to fatty acids from hydrocarbon oxidation, informed opinion in England does not consider this a very attractive proposition at present, in view of the present comparative cheapness of split fatty acids and of glycerine. This latter would have to be synthesized also, and although it has been done sereval times, in many ways the synthetic product does not adequately take the place of the real thing.

The transport of vegetable oils in bulk by means of tankers and tank cars has become an epoch-marking innovation, much better than the old method of casks, barrels, and drums, invariably involving the troublesome business of melting and steaming out. The melting-out department at Port Sunlight used to be an important one in the old days.

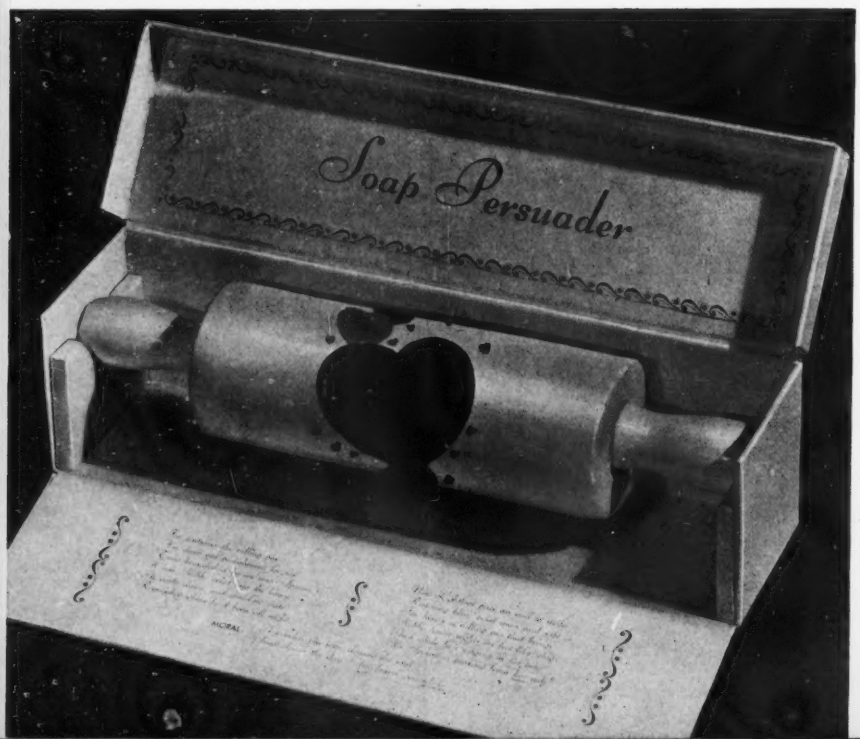
IN THE matter of oil and fat preservation, much advance has been made. Most oils contain natural anti-oxidants, but these may be removed or destroyed in processing, and thus arises the need for added preservatives, the precise action of which is not yet clearly understood, although the chain theory offers partial explanation. In brief this consists in supposing that fat molecules are "activated," combine more readily with oxygen, thus liberating energy whereby further molecules are activated and made oxidizable, so that a reaction chain is set up. The anti-oxidant or preservative breaks this chain by absorbing the

(*Turn to Page* 69)

New Products and

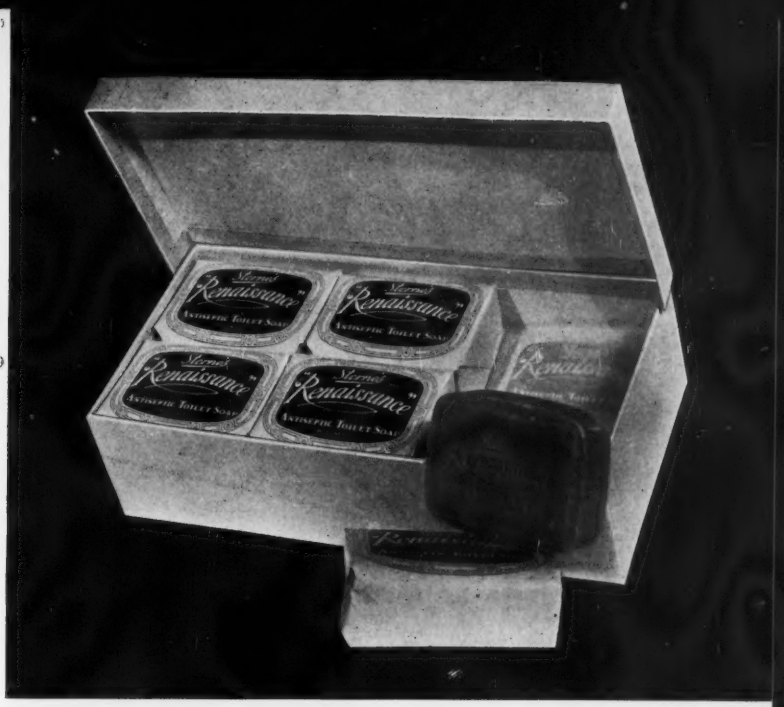
Franklin Research Co., Philadelphia, has adopted a set of new lithographed sample containers for its various waxes and cleaners. The four-ounce container is lithographed in black and gold. Each cap carries its felt dauber for sample testing.

Curran Corp., Malden, Mass., is now marketing its line of "Gunk" compounds in five-gallon lithographed steel kits. Containers, supplied by Wilson & Bennett Mfg. Co., are made in orange, blue, white.

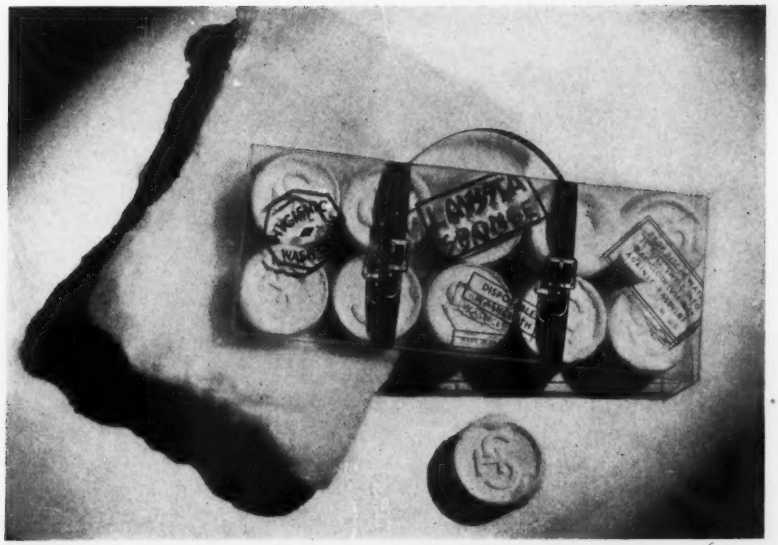


Lightfoot Schultz Co., New York, has recently introduced an intriguing soap novelty in the "Soap Persuader," — a rolling pin carrying a pound of bath soap mounted on a wooden pin. For wives only.

Packages



After a lapse of several years, Hewitt Soap Co., Dayton, O., is again marketing its Sterne's "Renaissance" antiseptic toilet soap. It is wrapped in the familiar two-tone green paper wrapper, and is packed twelve cakes to the box.



A new product for 1940 is the "Lavista Sponge Traveler." When dropped into water it comes out as a full size washcloth. Packed in a suitcase of transparent acetate. Maurice Levy, N. Y., distributor.

A copper kettle drum is the new container for Charbert's shaving soap, product of Parfums Charbert Inc., New York. Refills are supplied or the drum can be used when empty on a man's bureau top.

News....

Renaissance Soap on Market

Hewitt Soap Co., Dayton, Ohio, is conducting a test campaign in the Dayton territory for "Renaissance" antiseptic soap, by offering a sample bar upon the customer's request. The soap, formerly known as Sterne's "Renaissance" soap, has been absent from the market for several years.

Loss Heavy in Fels Fire

A compounding mill and twelve storage tanks suffered complete destruction in a severe fire at the plant of Fels & Co., at Woodland Ave. and Highland Road, Philadelphia, December 9. Damage was estimated in newspaper accounts in the neighborhood of $125,000, with one employee dead and twelve persons injured. The fire brought 200 firemen and 100 police to the scene and was also fought for several hours by 350 Fels employees trained for such an emergency. It was the first serious fire at the Fels plant for thirty years. Saved from the fire by prompt action was a huge warehouse said to contain several million gallons of palm oil. Following the fire it was reported that operations will have to be suspended temporarily pending repairs.

Inventors Show Novel Soaps

Several interesting soap novelties were on display at the recent Exposition of American Inventors held in Oakland, Calif. A bath sponge hollowed out to contain a specially designed patented soap cake was shown by L. J. Arms of San Francisco. The soap cake is locked in by an automatic valve so that it cannot slip out while the sponge is in use. Provision is made for inserting an extra cake of soap if additional lather is desired. The inventor says that prevention of accidents from slipping on wet cakes of soap is one of the particular advantages of his patented product. He is interested in licensing users under a royalty arrangement.

Another development shown at the Oakland exhibit was a shaving

Inventor shows new soap sponge.

cream dispenser for home use, designed to be attached to the wall or within the medicine cabinet. A special cap with a push valve opening is provided which allows the user to cut off just the desired amount of cream and then close the tube in a clean cut with no waste. Another asserted invention which some soapmakers, we seem to recall, have been laying claim to for years, is a sealing compound for the prevention of runs in silk stockings. It is also said to make stockings water-resistant to spotting. It is made by Run-Ban Co. of Los Angeles who market it in the form of a finished soap flake.

Cite Bost Tooth Paste

Bost Tooth Paste Corp., Indianapolis, has signed a stipulation with the Federal Trade Commission to cease representing that "Bost" tooth paste removes tobacco stains which have been absorbed into the enamel of the teeth. The stipulation points out that the tooth paste is not effective in removing such stains.

Court Award in Soap Case

Armour & Co., Jersey City, were recently ordered by a Jersey City court to pay $550 to Martha and Paul Ortman for damages suffered by them in the use of allegedly poisonous soap manufactured by Armour. The Ortmans, who sued for $15,000, were employed as janitors by McArdle Realty Co., which purchased soap from Armour and Joseph H. Browne in 1937. In her testimony, Mrs. Ortman claimed that the soap poisoned her, making her ill for eight weeks.

Brillo Earnings Higher

Brillo Manufacturing Co., Brooklyn, reported net profits of $72,157 for the third quarter of 1939. This was the best third quarter since 1931, and was equal to 42 cents per share of common stock, compared with $62,457 equal to 35 cents a common share for the third quarter of 1938. Net profit for the first nine months of 1939 amounted to $220,118 or $1.28 a share, and compared with $187,833, or $1.05 a common share for the corresponding period of 1938.

New Coast Pyrophosphate Plant

A. R. Maas Chemical Co., Los Angeles, has started construction of the first sodium pyrophosphate plant on the west coast. Work on the plant, which will add an entirely new unit to the firm's main chemical factory, began December 8. One story high, of steel and concrete construction, it will involve an investment of approximately $60,000 and is expected to get into production by February 1 with a capacity of 35,000 pounds of "pyro" per day.

Greatest demand for the product in southern California, according to Dr. A. Maas, head of the firm, is by soap manufacturers. Markets are

also being developed in the laundry, restaurant and hotel fields, where demand for sodium pyrophosphate is steadily increasing for laundering heavy-duty clothes and washing dishes. New markets have also been developed in the pottery and oil industries. Oil companies and drilling firms now use sodium pyrophosphate at the ratio of one pound to every foot of hole drilled, mixing it with the fluid mud in proportions of a 300th to 500th of one per cent.

Cite "Air Conditioning" Soap

Air Conditioning Textiles, Inc., New York, has recently been charged by the Federal Trade Commission with misrepresentations in the sale of its toilet soap known as "Air Conditioning the Human Body" soap and as "Air Conditioning" soap. The company had stated that its product "definitely reduced body temperature," and "eliminated perspiration objections." Use of the term "Air Conditioning," the commission stated, implies that the principle of air conditioning has in some manner been incorporated into the soap, which is not so.

W. H. Fisher Dies

W. Harry Fisher, for more than 45 years a sales representative for Albert Soap Co., died on Dec. 19 at the Royal Victoria Hospital, Montreal, following a short illness, in his 69th year. Mr. Fisher was born in London, England, and came to Canada at an early age, receiving his education at the High School of Montreal. He was a life member of the Montreal Amateur Athletic Association. He is survived by his wife, the former Muriel May Mills, and one son, C. William Fisher, both of Montreal.

Soap Employment Index Up

The employment index for the United States soap industry continued its steady upward movement of the Summer months in October of this year and reached a figure of 91. This compares with the September, 1939 index of 88.5 and the October, 1938 index of 83. The payroll index for the month of October also increased over other months. The figure was 109.1 as compared to 107.1 for September of this year and 98.6 for October, 1938.

R. E. Dorland Heads D.C.A.T.

Ralph E. Dorland, eastern sales manager, Dow Chemical Co., Midland, Mich., was elected chairman of the Drug, Chemical and Allied Trades Section of the New York Board of Trade at a recent meeting held by the executive committee at the Drug and Chemical Club, New York. J. J. Toohy, sales manager, E. R. Squibb & Sons, was elected vice-chairman. Robert B. Magnus, Magnus, Mabee & Reynard, Inc., was re-elected treasurer, and Ray Schlotterer re-elected secretary. Francis J. McDonough, president of the New York Quinine & Chemical Works, will represent the section in the New York Board of Trade. Members of the new executive committee are: R. F. Berls, McKesson & Robbins, Inc.; Herman L. Brooks, Coty, Inc.; C. C. Caruso, Schieffelin & Co.; John A. Chew, John A. Chew, Inc.; James J. Clark, Liggett Drug Co.; Turner F. Currens, Norwich Pharmacal Co.; M. N. de Noyelles, Charles Pfizer & Co.; James DeCesare, White Laboratories; A. E. Johnston, Colgate-Palmolive-Peet Co.; David L. Kaltman, D. Kaltman & Co.; Dr. Elvin H. Killheffer, E. I. du Pont de Nemours & Co.; Roy W. Moore, Canada Dry Ginger Ale, Inc.; S. B. Penick, Jr., S. B. Penick & Co.; J. P. Remensnyder, Heyden Chemical Corp.; E. T. T. Williams, Becton, Dickinson & Co., and Victor E. Williams, Monsanto Chemical Co.

Ralph E. Dorland

Colgate Co. Extra Dividend

Colgate-Palmolive-Peet Co., Jersey City, recently voted an extra dividend of 50 cents on its common stock bringing the year's disbursements to a total of $1, the highest dividend paid in the past seven years. A bonus of one week's pay was also voted to all employees who have been with the company for the past year. Plans are being made for the redemption of 30,000 shares of the company's 6 per cent preferred stock at the call price of $102.50. These will be redeemed on Feb. 1, by lot.

Mich. Cosmetic Assn. Elects

The Allied Drug and Cosmetic Association of Michigan recently elected Walter Daniels, Parke, Davis & Co., as president for the year 1940. Other officers elected for the same term are: A. S. Bedell, Beauty Counselors, Inc., vice-president; G. de Navarre, Maison G. de Navarre Associates, secretary, and P. Cole, Eaton Clark Co., treasurer. Elected to the executive committee were G. Buck, Standard Oil Co. of Indiana and G. Snyder, Commercial Solvents Corp. The association held its seventh annual Christmas Party on December 8.

John F. Wilker Dies

John F. Wilker, treasurer, Davies-Young Soap Co., Dayton, O., died December 4, at 66 years of age. He had been associated with that company for the past twenty-four years and is survived by his wife and four children.

D.C.A.T. Sets Banquet Date

The fifteenth annual banquet of the Drug, Chemical and Allied Trades Section of the New York Board of Trade will be held March 14, 1940, at the Waldorf-Astoria Hotel, New York City. The event will start with a reception at 6:30 P.M.

James P. Newton Dies

James P. Newton, president of Haskins Bros. & Co., soap manufacturers, Omaha and Sioux City, died suddenly of a heart attack at his home in Sioux City on December 15. Mr. Newton became associated with the Haskins company in 1889 when he joined the firm as a traveling salesman. In 1908, he and his elder brother, William, took over full control of the company with James as secretary. He remained in this office until 1929, when upon the death of his brother he assumed the presidency.

Soap A Necessity?

"Soap and soap flakes are not a necessity of life within the meaning of the Lord's Day Act" said Magistrate R. B. Graham in a Winnipeg, Manitoba, court when convicting Aaron Y. Raber, a grocer, of selling a bar of soap and a package of soap chips on a Sunday. Raber, who was fined $5 and costs, is planning to appeal the conviction in order to determine whether soap and soap flakes are necessities under the act.

"Soap" Shampoo Acceptable

If the word, "soap," appears as part of the name or title of any saponaceous product, such as a shampoo, shave cream, or the like along with the other parts of the name, the product does not come under the new federal Food, Drug & Cosmetic Act, according to an opinion expressed recently by a leading official of the Food & Drug Administration in Washington. In other words, if a shampoo is designated as "liquid soap shampoo" or "soap shampoo," and it is essentially made up of soap, it is classified as a soap and exempt from the provisions of the Act. But if it is labeled solely as "shampoo" without the modifying word, "soap," it is classified as a cosmetic and subject to the new Act. It is on this latter basis that several nationally-advertised shampoos have been seized by the F.D.A. even though their labels made no claims of a cosmetic nature and the products were offered solely to wash and cleanse the hair. It is understood that the F.D.A. officials are puzzled over this interpretation of the law and that the seizures were made principally that they might develop into test cases and aid in clarifying the regulations. At the present time, this official stated, the F.D.A. considers the use of the word, "soap," in the product name as sufficient to exempt any such products from the law and that such products are not in danger of seizure or other Government action.

Postpone Soap Meeting

The annual meeting of the Association of American Soap & Glycerine Producers, which was to have been held at the Waldorf-Astoria Hotel, New York, January 11, has had to be postponed due to the inability of many of the regular attendants to be present on the date selected. As soon as a new meeting date is fixed, notices will be mailed to the industry by the association office. All members of the industry are invited to attend.

Shampoo Makers Meet

A meeting of a group of leading shampoo manufacturers was held on December 27 at the offices of the Association of American Soap & Glycerine Producers in New York to discuss the interpretation of the term, "shampoo," by the Food & Drug Administration under the federal Food, Drug & Cosmetic Act. About twenty manufacturers were represented at the meeting which was conducted by Roscoe C. Edlund of the Soap Association, and S. L. Mayham of the Toilet Goods Association. At the same meeting, the classification of shave creams under the Act was also discussed.

Oil Trades Meeting

The Oil Trades Association of New York will hold its quarterly meeting in the Roof Garden of the Waldorf-Astoria, New York, on January 23rd.

Parker-Herbex Corp. Moves

Parker Herbex Corp., liquid shampoos, Long Island City, N. Y., has moved to new and larger quarters at 29-50 Northern Boulevard.

Anthony J. Fries Dies

Anthony J. Fries, widely known manufacturer of soap dies, and head of Anthony J. Fries & Son Co., Cincinnati, died in that city last month after a four-day illness. Mr. Fries, who founded the company for making engravings and dies in specialized fields forty-five years ago, was regarded as an international authority for that type of work. He was 76 years old, and had been associated with such organizations as the Cincinnati Chamber of Commerce, National Marking Device Association and the Cincinnati Stamp Manufacturers Association, of which he was a past president. Surviving are his son Carl Fries, associated in the business, his widow and two daughters.

Melbourne Braham Dies

Melbourne A. H. Braham, secretary-treasurer, Arkansas Co., textile soaps, Newark, N. J., died unexpectedly in his home in Summit, N. J., December 1. Mr. Braham, who was forty-seven years of age, had been associated with the Arkansas company for about 28 years.

Uses Candle as Premium

One of the current premium offers being made by White King Soap Co., Los Angeles, is a coupon offering a pine-scented perfume candle for ten cents and three wrappers from the company's new "Sierra Pine" toilet soap. The coupons are being distributed door to door in California cities.

Chem Salesmen Xmas Party

The Salesmen's Association of the American Chemical Industry held its 1939 annual Christmas Party in the Grand Ball Room of the Hotel Edison, New York, on December 28. A floor show was the principal entertainment at the party, while a Christmas edition of the "Chemical Peddler" made its appearance.

Hold Beefsteak Dinner

The Cosmetic, Drug and Allied Industries held their Beefsteak Dinner at the Hotel Pennsylvania, New York, on December 14th.

NEW *headlines* TO PUT PUNCH IN YOUR SOAP COPY

For a long time, putting punch in soap copy was just about as easy as trying to put consumer appeal in doorknobs. It was just one of those taken-for-granted items. Then along came a new super soap improver called VICTOR TETRASODIUM PYROPHOSPHATE. Today, there's news in soap . . . news that packs a real "wallop!" Capitalize on it while it's still "front page."

Here are a few of the outstanding characteristics of TETRASODIUM PYROPHOSPHATE that have helped make headlines . . . and sales history . . . for those soap makers who have recognized their value as talking points. A cleaner, whiter wash due to powerful water-softening! Unique "peptizing" and iron repressive action! Increased sudsing power! Mild alkalinity . . . (pH of 10.2)! Marked solvent action on gums, waxes, etc.!

In expectation of the growing demand for TETRASODIUM PYROPHOSPHATE as a soap builder, Victor developed an improved manufacturing technique . . . built the largest plant of its kind in existence . . . was first to meet the demand for a product of improved quality.

TETRASODIUM PYROPHOSPHATE ..BY..

VICTOR

HEADQUARTERS FOR... pHosphates

VICTOR CHEMICAL WORKS, 141 W. Jackson Boulevard, Chicago, Illinois
Plants: Nashville, Tenn.; Mt. Pleasant, Tenn.; Chicago Heights, Ill.
Offices: New York, N. Y.; Kansas City, Mo.; St. Louis, Mo.; Greensboro, N. C.

Tell Story of Glycerine at Chemical Show Soap Exhibit

A CENTER of attraction at the recent Seventeenth Exposition of Chemical Industries held at the Grand Central Palace, New York, was the "Glycerine" display sponsored by the American Association of Soap & Glycerine Producers. A transparent panel in this display, was utilized to tell the story of glycerine sources, and the back wall of the exhibit contained sketches which dramatized many industrial uses of this product. A waterfall representing the flow of glycerine out of a still was simulated in the back wall and along each side of the booth were cases which contained a collection of commercial products in which glycerine is used. Four representatives of the Association, three of whom are technical men, were kept busy answering inquires from thousands of visitors who left their names and addresses with requests for special literature and other information. Ames & Norr, New York, were in charge of publicity for the glycerine exhibit.

Of perhaps more interest to the soap manufacturer and allied chemical manufacturer were exhibits of processing equipment, which included units for crushing and grinding, flow of liquids, materials handling, filtration, drying, etc.; containers and packaging machinery; laboratory equipment and supplies, and safety equipment.

Karl Kiefer Machine Co., Cincinnati, displayed several models of equipment for cleaning, filling and closing bottles and jars, besides conveyor equipment. Also showing this type of machinery was Stokes & Smith Co., Philadelphia, who had on display a "Transwrap" packaging machine which is fully automatic, and which was in actual operation at the exhibit. The Stokes & Smith Company also distributed literature on its other filling and wrapping machines. Pneumatic Scale Corp., Norfolk Downs, Mass., was still another firm which exhibited packaging and bottling equipment as well as various products wrapped or filled on their machines.

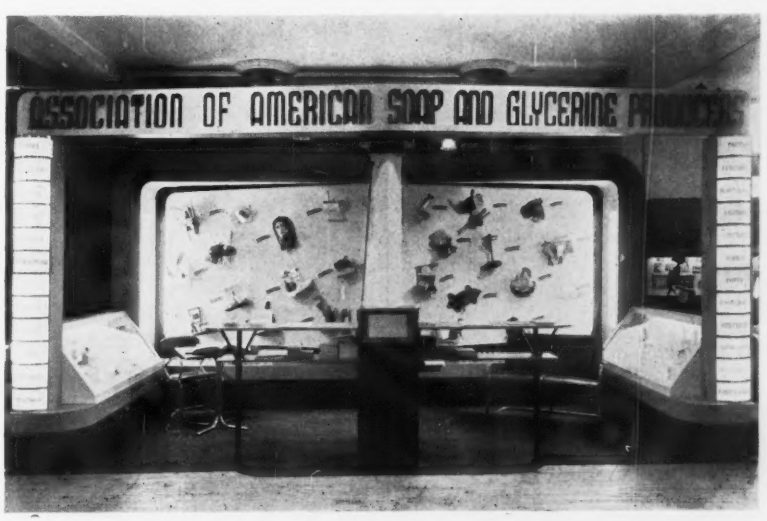
Among those companies showing heavier type processing machines were Proctor & Schwartz, Inc., Philadelphia, who maintained a large booth filled with their line of processing equipment of rollers, mixers, and a Proctor "Aero-Form" Dryer; Sprout, Waldron & Co., Muncy, Pa., with their mixing machine and literature on grinders, sifters, etc.; Mixing Equipment Co., Rochester, showing their "Lightnin" mixers in action; and Ertel Engineering Corp., New York, and Alsop Engineering Corp., Milldale, Conn., both exhibiting their individual models of mixers, filter machines, etc.

Among the raw material suppliers to the soap and sanitary chemical manufacturers who maintained booths at the chemical show were Hercules Powder Co., Wilmington, Del., with a large corner room, the outside walls of which were covered with pictures showing products in which "Hercules" materials were used; Niagara Alkali Co., New York, with a booth stressing the Niagara company as the pioneer producer of caustic soda and caustic potash; and the Koppers Co., Pittsburgh, which displayed a huge lump of coal and their line of coal-tar products, i. e., phenolics, naphthalene, etc.

Other booths featuring equipment for soapmakers were those sponsored by U. S. Stoneware Co., Akron, O., with a display of corrosion-resisting tank linings, tanks, jars, vats and kettles; International Nickel Co., New York, whose display consisted of a workman pouring molten nickel from a ladle, the melt dividing into many streams, each leading to a certain alloy of nickel, of which examples of use were given; Lukens Steel Co., Coatesville, Pa., with a display of clad-steel equipment, and Dow Chemical Co., Midland, Mich., with its "Dowtherm" vapor generators and heating systems.

Foster D. Snell, Inc., chemists and engineers, New York, maintained a booth in which they illustrated various research and investigations which they had recently conducted. Wheeling Corrugating Co., Wheeling, W. Va., displayed its many steel containers and drums, and the Dicalite Co., New York, publicized its product "Dicalite" used for filtering

Four representatives of the Soap & Glycerine Association were kept busy for a full week answering thousands of questions asked by visitors to the Association booth at the 17th Exposition of Chemical Industries.



Stop hunting — we got 'em!

— SUBSTITUTES

CAMFOL . . . . . for Camphor Sassafrassy
CITROGEN No. 22 . . . . . for Citronella
SAFRASS A.P. . . . . for Sassafras Artificial
BERGAMOT SYNTHETIC "S" . for Bergamot Natural
GERANIUM SYNTHETIC A.P. . for Geranium Natural
LAVENDER FLEURS
SYNTHETIC A.P. . . . . for Lavender Natural

These substitutes can be used successfully alone, or in conjunction with the natural oils to bring down your cost. They merit your consideration.

Aromatic Products, Inc.

15 East 30th Street, New York City — **Factory: Springdale, Conn.**

ATLANTA	DALLAS, TEXAS	MEMPHIS, TENN.	PITTSBURGH	CHICAGO
223 Spring St., S.W.	5207 Monticello Ave.	364 So. Front St. Room 108, Brokers Bldg.	727 Grant Building	205 West Wacker Drive

and as a filler for polishes, resin compounds, etc.

Several booths equipped with precision instruments also held the attention of soapmakers. Illinois Testing Laboratories, Inc., Chicago, showed their line of potentiometers, electric resistance thermometers, pyrometers and velometers, while Atlas Electric Devices Co., Chicago, exhibited its "Fade-Ometer," "Launder-Ometer" and "Weather-Ometer."

Lever Bros. Stipulation

Lever Brothers Co., Cambridge, Mass., has entered into a stipulation with the Federal Trade Commission to discontinue certain statements to which the commission objects in the sale of "Rinso." The company has implied in its advertising copy, according to the complaint, that "Rinso" will "never" leave red or rough hands; that the product in every instance will make clothes at least five shades whiter or that colors "never" fade when washed with it; that no other soap will produce the degree or kind of whiteness attained by "Rinso," or will do as good or as quick a job. The representation that makers of 33 washing machines have recommended the effectiveness of "Rinso" "above all others" will also be discontinued.

E. G. Kohnstamm Dies

E. G. Kohnstamm, chairman of the board of H. Kohnstamm & Co., laundry soap, New York, recently died in Los Angeles at the age of 82. He entered the company's employ in 1872 and served as president of the firm from 1922 to January, 1938, when he was appointed chairman of the board. He was born in Jersey City, and is survived by a wife and a brother, Joseph.

West Coast Soap To Advertise

West Coast Soap Co., Oakland, Cal., is planning a new advertising campaign for its products "Powow Modern Household Cleanser" and "White Navy Soap." Emil Brisacher & Staff, San Francisco, have been appointed to handle the account.

Scores Trade Barriers

Gov. Lloyd C. Stark of Missouri urged the elimination of trade barriers between the various states when speaking recently before the National Association of Accredited Publicity Directors at the Lotus Club, New York. For every law written by a state to discriminate against free competition of citizens from other states there will be 47 retalitatory laws, he said. Though the Constitution forbids taxes by states against other states, he continued, the Legislatures get around the Constitution by passing laws favoring local bidders in the expenditure of state funds, imposing special taxes on out-of-state corporations and especially by highway laws.

P. & G. Advertising Campaign

Procter & Gamble Co., Cincinnati, is conducting a church advertising campaign in which "Ivory" soap wrappers turned over to churches by consumers and in turn sent to the company in quantities of 200 or more, will be redeemed at the rate of one-half cent apiece.

F.T.C. Cites Soap Company

Indianapolis Soap Co., and Williams Soap Co., Indianapolis, have recently been cited by the Federal Trade Commission for misrepresentations in the sale of soap products. The soaps were advertised as being free from impurities and other harmful substances, made from natural mineral and vegetable oils, capable of purifying and opening the pores of the skin and being of superior grade and quality. The commission states that these representations were exaggerated and misleading.

Ruzicka Awarded Nobel Prize

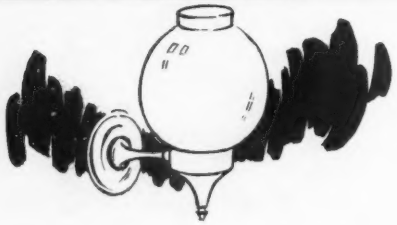
Professor L. Ruzicka, associate director of research, Chuit, Naef & Cie, aromatics, Geneva, Switzerland, was recently awarded the Nobel Prize of 1939 for his work on polycyclic compounds. His researches have resulted in the synthetic production of the male sex hormones, testosterone. Professor Ruzicka is the discoverer of "C 15" lactone and of the new ionone "Parmone." Firmenich & Co., New York, are sole distributors in the United States for Chuit, Naef & Cie.

L. A. Soap in Coupon Drive

Coupons, good for ten cents on the purchase of a package of "Scotch" granulated soap are being distributed from door to door in California cities by Los Angeles Soap Co., of Los Angeles. The company is also promoting the sale of its new "Sierra Pine" toilet soap by distributing coupons offering one cake free with each cake purchased.

The annual sales conference of representatives of Fritzsche Bros., Inc., was held at the New York offices during the week of December 11. The group below is pictured at the sales conference dinner held at the Hotel New Yorker the evening of December 14. The final event of the week was the annual dinner dance held in the Grand Ballroom of the New Yorker, December 16, and attended by 250 executives and employees of the Fritzsche organization.

LIQUID SOAP PERFUMES



The perfumes in this group produce extremely pleasant floral and bouquet effects at the low cost of but one and a fraction cents per gallon. Being highly soluble they will not affect the clarity of the soap.

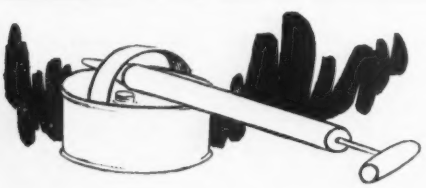
LAUNDRY SOAP PERFUMES

Our Special Perfume Division has just perfected six new and very interesting laundry soap perfumes. These produce clean, fresh odors at a cost of less than five cents per hundred pounds of soap. By all means, investigate!

FLY SPRAY PERFUMES

Our selection of insecticide perfumes includes a fine choice of live, refreshing odors. Although competitively priced, they can be relied upon to provide complete odor coverage and fragrance appealing to the most critical.

DEODORANT P-36



This is a new and remarkably effective deodorant for use in products containing Lethane No. 384 Special. It completely neutralizes the Lethane effect without leaving any perceptible odor of its own. Powerful, yet inexpensive.

FRITZSCHE BROTHERS, Inc.

PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK, N. Y.

BRANCH STOCKS

BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.

FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Foragers Elect

A new Board of Governors for the years 1940-41 was elected by the Foragers at their annual meeting, December 27. Those elected were Sam W. H. Jones, Gorham Co.; F. G. Hammond, J. B. Williams Co.; L. H. Schultes, Hewitt Soap Co.; G. F. Zinnell, Harold Fritchie Co.; C. R. Keeley, *Toilet Requisites*, and O. H. Betz, Howard Manufacturing Co.

Cites "Dawn Shampoo"

The Arvil Co., Chicago, has recently been ordered by the Federal Trade Commission to cease misrepresentations in the sale of its product "Dawn Shampoo." The company stated, in its advertisements, that the product would give permanent relief from dandruff and was a competent remedy for conditions responsible for hair falling out, also, that the shampoo encouraged hair growth.

BIMS of Boston Stag Party

The BIMS of Boston will hold their first Winter Stag Dinner Party on January 18, at the Hotel Lenox, that city. Robert C. Kelly, chairman of the executive committee has announced that reservations will be sent out in due time.

Incorporate Onalim Company

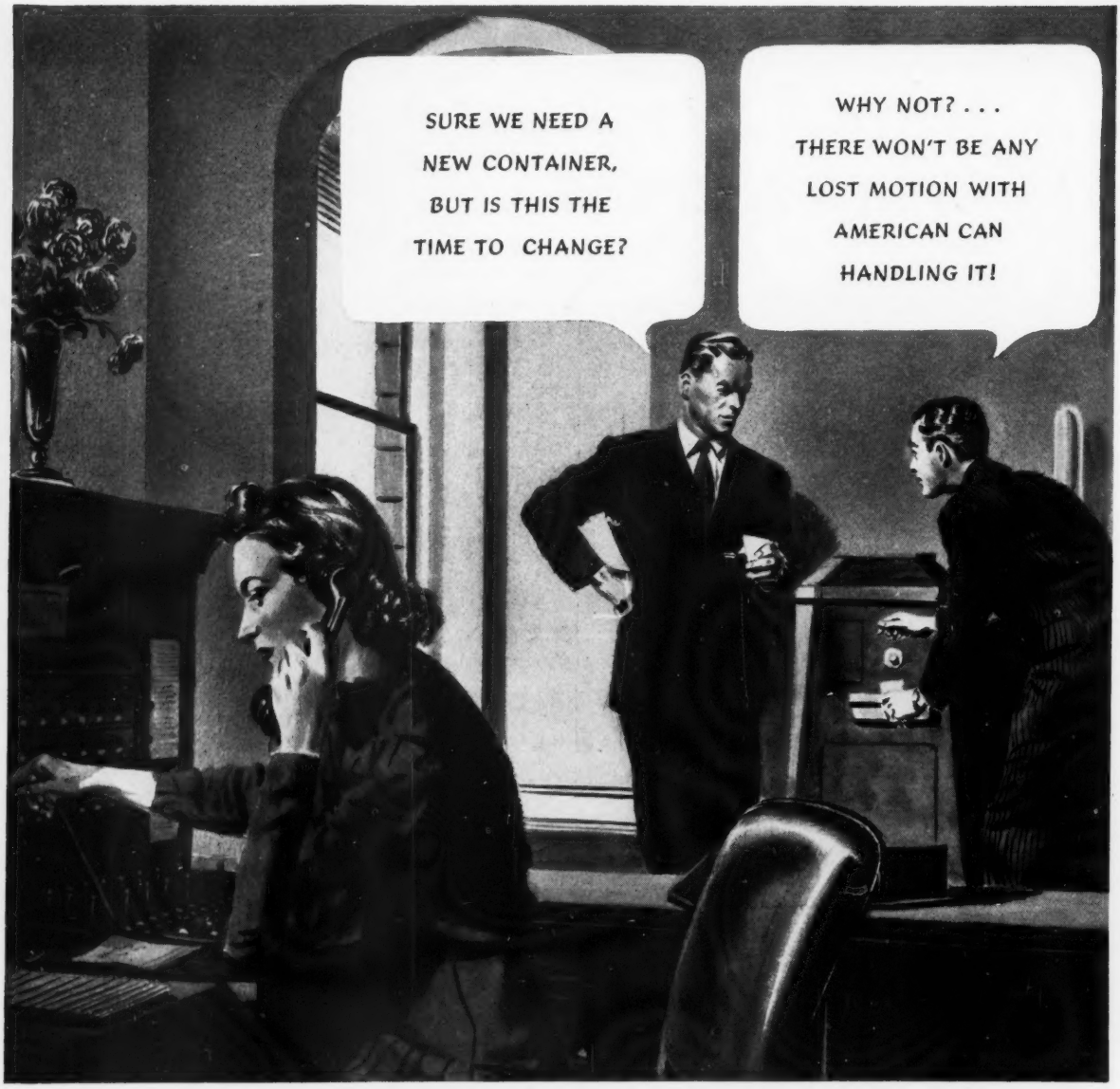
Louis Milano, formerly doing business as Onalim Co., 2295 Second Ave., New York, has incorporated under the name of Onalim Co., Inc., at the same address. The company is the maker of "Onalim" coconut oil shampoo base.

Chicago Christmas Party

The Chicago Drug and Chemical Association held their annual Christmas banquet at the Hotel Stevens, Chicago, Dec. 21.

Hemrick Joins Visking Corp.

Wm. R. Hemrick who recently resigned as advertising manager for Armour & Co., Chicago, has been appointed advertising and sales promotion manager of the Visking Corp., Chicago. Mr. Hemrick had been with Armour for fourteen years.



"You know how they do things, Paul. They'll plan every step in advance. They'll coordinate every move with our operations. Then when we give the word, the job will move ahead without a hitch. Why, we'll have that new package in production before we know it! Let's call them in tomorrow and start things moving."

CANCO AMERICAN CAN COMPANY, 230 PARK AVENUE, NEW YORK, N. Y.

Contracts Awarded

Laundry Soap Award

Kay Tee Products Co., Brooklyn, N. Y., was awarded the contract on 1,584 lbs. laundry soap at 10.6 cents in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Soap Dispensers Bid

Bobrick Mfg. Corp., New York, submitted the low bid of $10 and $15, f.o.b., on soap dispensers in a recent opening by the Veterans Adm. Supply Department at Washington, D. C.

Automobile Soap Bids

Knoxall Corp., Indianapolis, submitted the low bids of 3.89 cents on 30 cans automobile soap and 4.17 cents on 35 cans of same in a recent opening by the Post Office Supply at Washington, D. C. At the same opening, Harley Soap Co., Philadelphia, bid low on 28 bbls. of automobile soap and Davies-Young Soap Co., Dayton, O., was low on 8 half-bbls. at 4.15 cents.

Post Office Cleaner Bid

Lasting Products Co., Baltimore, bid low on 7,000 gals. cleaner and renovator at 46 cents in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Veterans Powder Soap Bid

Unity Sanitary Supply Co., New York, submitted the low bid of 2.5 cents on 3,000 lbs. powder soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Scouring Powder Bids

Armour & Co., Chicago, bid low on 4,800 cans scouring powder at 2.45 cents in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, American Soap & Washoline Co., Cohoes, N. Y., bid low on 3,600 lbs. scouring powder at 1.24 cents. In a later opening, the American Soap & Washoline Co. also bid low on 10.200 lbs. scouring powder at 1.29 cents.

Washington Grit Soap Bid

International Supply Co., Cambridge, Mass., submitted the low bid of 3.6 cents on 10,008 cans grit soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Disinfectants Bids

Murphy Products Co., Gouverneur, N. Y., submitted the low bid of 49 cents on 160 gals. disinfectants in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, the company also bid low on 1.320 gals. disinfectants at 41.5 cents.

Disinfectants Awards

Murphy Products Co., Gouverneur, N. Y., was awarded the contract on 1,210 gals, disinfectants at 40.5c a gal. in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, Jas. Good, Philadelphia, was awarded the contract on 8,105 gals. toilet soap at 19.7 cents.

Toilet Soap Bids

Iowa Soap Co., Burlington, Iowa, submitted the low bid of 10 cents on 15,000 lbs. toilet soap in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, the company also submitted the low bid of 9.4 cents on 11,250 lbs. toilet soap.

Marine Corps Soap Bid

Swift & Co., Washington, D. C., submitted the low bids of 8.25 cents on 8,050 lbs. chip soap and 9 cents on 675 lbs. grit soap in a recent opening by the Marine Corps at Washington, D. C. Other companies who submitted low bids at the same opening were Colgate-Palmolive-Peet Co., Jersey City, who bid low on 15,000 lbs. laundry soap at 4.11 cents and Procter & Gamble Distributing Co., Baltimore, who submitted the low bid of 3.71 cents on 20,064 lbs. soap powder.

Picatinny Arsenal Wax Award

Stevenson Bros. & Co., Philadelphia, were awarded the contract on 150 lbs. waterproofing wax at 64 cents in a recent opening by the Army Ordnance Dept. at Picatinny Arsenal, N. J.

Soft Soap Bids

Harley Soap Co., Philadelphia, bid low on 130 kegs soft soap at 3.89 cents in a recent opening by the Post Office Supply Department at Washington, D. C. The same company was also low on 50 half barrels of soft soap at 3.64 cents and on 120 barrels at 3.4 cents.

Liquid Toilet Soap Bid

Harley Soap Co., Philadelphia, submitted the low bid of 17.95 cents on 11,000 gals. toilet soap in a recent opening by the Treasury Procurement Supply at Washington, D. C. At a later opening, the same company submitted the low bid of 4.65 cents on 6,200 lbs. automobile soap.

Washington Toilet Soap Bid

Smoothie Hand Soap Co., Detroit, submitted the low bid of 11 cents on 6,000 lbs. toilet soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Metal Polish Bids

Charles Chemical Co., Scranton, Pa., submitted the low bid of 26.5 cents on 2,000 gals. metal polish in a recent opening by the Post Office Supply. At the same opening, Waxaid Co., Baltimore, bid low on 5,004 lbs. metal polish at 7.44 cents.

Carbon Tetrachloride Award

Hughes Chemical Co., Baltimore, was awarded the contract on 3,500 lbs. carbon tetrachloride at 5.14 cents in a recent opening by the Chemical Warfare Division at Edgewood Arsenal.

New Trade Marks

The following trade-marks were published in the December issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

SANI-FLUSH — This in solid letters above portrait of woman pouring cleanser into water-closet bowl, describing cleanser. Filed by The Hygienic Products Co., Canton, O., Dec. 10, 1938. Claims use since June 1, 1938.

CLOVERINE—This in solid letters describing shaving cream. Filed by Wilson Chemical Co., Tyrone, Fla., Aug. 15, 1939. Claims use since Jan. 10, 1922.

PYRON—This in stenciled letters describing powdered cleanser. Filed by The Diversey Co., Chicago, Aug. 30, 1939. Claims use since Sept., 1934.

FOODCRAFT — This in fancy letters describing soaps. Filed by Foodcraft Products, Chicago, Sept. 13, 1939. Claims use since Sept. 1, 1935.

K. C.—This in script letters describing soap. Filed by The Buck-Jack Co., Baltimore, Sept. 14, 1939. Claims use since June 10, 1939.

HANDEX—This in solid letters describing hand cleanser. Filed by Fulton Process and Chemical Corp., Gloversville, N. Y., Oct. 3, 1939. Claims use since Sept. 25, 1939.

CLOVERINE — This in script letters describing tooth paste. Filed by Wilson Chemical Co., Aug. 15, 1939. Claims use since March 15, 1910.

CALATOX—This in solid letters describing insecticidal material. Filed by Ansbacher Siegle Corp., New York, Aug. 22, 1939. Claims use since Aug. 22, 1930.

4 STAR—This with the word "star" in script letters describing moth crystals. Filed by D. Blum & Co., New York, Sept. 11, 1939. Claims use since Feb., 1937.

HANDICHLOR — This in solid letters describing bleaching preparation with cleansing properties. Filed by Jamesen Chemical Corp., Brooklyn, Sept. 1, 1939. Claims use since May, 1939.

H-C—This in outlined letters within oval of contrasting color describing deodorizing cleanser. Filed by H-C Products Co., Detroit, Aug. 18, 1937. Claims use since July, 1936.

STAINEZE—This in solid letters describing cleaning solvent. Filed by D. Blum & Co., New York, Sept. 11, 1939. Claims use since Sept., 1934.

JUNO SUDS—This in solid letters describing household cleanser. Filed by Linco Products Corp., Chicago, Sept. 15, 1939. Claims use since Aug. 28, 1939.

PELICAN PRODUCTS—This in solid letters on picture of pelican with shoe in its beak, describing shoe polish. Filed by Pelican Products Co., New York, Feb. 4, 1939. Claims use since Jan. 25, 1939.

CITO—This in script letters describing cleaning fluid. Filed by Cito Co., New Orleans, Sept. 20, 1939. Claims use since Aug. 24, 1939.

SOAPALITE—This in outlined letters describing detergent compound. Filed by Cowles Detergent Co., Cleveland, Oct. 4, 1939. Claims use since April 18, 1939.

VISCOL—This in shaded letters describing soap. Filed by The Viscol Co., Stamford, Conn., Oct. 12, 1939. Claims use since Sept. 20, 1939.

"S"—This in large stenciled letter describing cleansing material. Filed by Philadelphia Quartz Co., Philadelphia, Oct. 14, 1939. Claims use since Jan. 1, 1900.

DUCHESS—This in solid letters describing no-rubbing floor wax. Filed by Lanco Products Co., Brooklyn, June 29, 1939. Claims use since Jan. 1, 1938.

FAWN—This in solid letters upon octagonal figure, describing germicidal soap and germicidal shaving soap. Filed by James A. Smith, Philadelphia, Jan. 24, 1939. Claims use since Dec. 2, 1938.

GAGG—This in outline letters mounted upon background of contrasting color. Filed by Gagg Chemical Co., Miami, Fla., Sept. 9, 1939. Claims use since June 15, 1939.

SCREEN STAR—This in solid letters describing toilet soaps. Filed by Mary Woodward Reinhardt and Mary H. McSweeney, New York, Oct. 10, 1939. Claims use since Aug. 4, 1938.

CRYST-O-KLEER—This in solid letters describing window cleaning preparation. Filed by Chapman & Rodgers, Inc., Philadelphia, Oct. 12, 1939. Claims use since May 16, 1939.

KARWENDOL — This in solid letters describing insecticides and disinfectants. Filed by Karwendel Gesellschaft Nachf. Rentschler & Cie, Laupheim, Wurttemberg, Germany, July 20, 1938. Claims use since Nov., 1931.

MOOR MANS — This in solid letters describing stock dips. Filed by Moorman Manufacturing Co., Quincy, Ill., Feb. 16, 1939. Claims use since May, 1894.

ADVANCE—This in solid letters describing tooth powder. Filed by Ben-Hur Laboratories, Los Angeles, Nov. 6, 1939. Claims use since Aug. 1, 1939.

SPARK—This in solid letters describing dentifrice. Filed by Nyal Co., Detroit, Nov. 6, 1939. Claims use since Oct. 24, 1939.

NYRONE—This in solid letters describing polishes and waxes. Filed by O-Cedar Corp., Chicago, Oct. 26, 1939. Claims use since Oct. 2, 1939.

Trade Marks Granted

372,966. Insecticide. Tropical Insecticide Co., Fort Lauderdale,

"A GOOD HOUSE WITH WHICH TO DO BUSINESS"

This month marks the beginning of our 124th year in the business of furnishing reliable Industrial Chemicals, Gums, Waxes and Allied Products, backed by good and efficient service, to our customers in American Industry.

With normal imports of many commodities upset by conditions abroad, ISCO Service can help you by minimizing the resulting inconvenience.

We are able to offer excellent domestic substitutes for the imported article. The good quality and reliability of these domestic lines has won them welcome by many who had heretofore depended upon the foreign product.

In other lines such as some of the imported CHEMICALS, GUMS and WAXES, supplies are very limited, in fact, very scarce, but we are doing our very best to take care of our customers' requirements.

We have established a "No War Profits" policy. ISCO prices will continue to be based on current market values. We'll spare no effort to continue to merit the opinion we so frequently and proudly hear expressed, that "Innis, Speiden & Co. is a good house with which to do business."

If you are not already using ISCO Products and are not familiar with ISCO Service, this would be a good time to prove their value.

ISCO CAUSTIC SODA
Various forms and packages

NAPHTHALENE
Prime White Refined, Various forms and packages

ISCO IRON CHLORIDE
Lumps and Crystals

ISCO PURE WAXES
Carnauba • Candelilla
Beeswax • Ceresines
Ozokerite

ISCO CAUSTIC POTASH
Various forms and packages

ISCO REFINED GUMS
Arabic • Karaya
Tragacanth • Locust Bean

INNIS, SPEIDEN & CO.

Established 1816

117 LIBERTY ST. NEW YORK

CHICAGO • CLEVELAND • BOSTON • PHILADELPHIA • GLOVERSVILLE, N. Y.

Fla. Filed May 26, 1939. Serial No. 419,867. Published September 5, 1939. Class 6.

372,969. Combination Set Consisting of a Mug and Soap. Shulton, Inc., New York. Filed May 26, 1939. Serial No. 419,886. Published September 12, 1939. Class 50.

372,974. Shampoo. La Charma Co., Tampa, Fla. Filed May 27, 1939. Serial No. 419,989. Published September 12, 1939. Class 6.

372,989. Disinfecting and Cleansing Compound. Scud Research Laboratories, Calumet Park, Ill. Filed June 10, 1939. Serial No. 420,390. Published September 5, 1939. Class 6.

373,014. Dip Disinfectant. J. L. Hoffman Co., Allentown, Pa. Filed June 24, 1939. Serial No. 420,908. Published September 12, 1939. Class 6.

373,028. Cleaning Solvent. Detroit Rex Products Co., Detroit. Filed June 29, 1939. Serial No. 421,068. Published September 12, 1939. Class 4.

373,038. Moth-Proofing Solution. Sears, Roebuck & Co., Chicago. Filed July 3, 1939. Serial No. 421,261. Published August 29, 1939. Class 6.

373,052. Water Softener. Harriet Hubbard Ayer, Inc., New York. Filed July 13, 1939. Serial No. 421,504. Published September 5, 1939. Class 6.

373,079. Insecticides. Rose Manufacturing Co., Philadelphia. Filed July 27, 1939. Serial No. 422,018. Published September 12, 1939. Class 6.

373,106. Hand Cleanser. Lindex Co., Linden, N. J. Filed August 7, 1937. Serial No. 396,166. Published September 19, 1939. Class 4.

373,112. Cleaner. Blind-X Co., Minneapolis. Filed September 17, 1938. Serial No. 410,679. Published September 19, 1939. Class 4.

373,284. White Shoe Cleaner. Gardenia Products Co., Memphis. Filed March 28, 1938. Serial No. 404,622. Published September 26, 1939. Class 4.

373,346. Cleaning Preparation. Hudson Products, Inc., Jersey City, N. J. Filed June 26, 1939. Serial No. 420,954. Published September 26, 1939. Class 4.

373,393. Cleansing Compounds. E. F. Houghton & Co., Philadelphia. Filed July 28, 1939. Serial No. 422,054. Published September 26, 1939. Class 4.

373,613. Laundry, Textile, and other Industrial Soaps. Industrial Soap Works, Kearny, N. J. Filed July 31, 1939. Serial No. 422,161. Published October 3, 1939. Class 4.

373,616. Soaps. F. Reinitz & Co., New York. Filed August 3, 1939. Serial No. 422,258. Published October 3, 1939. Class 4.

373,687. General Purpose Household and Industrial Cleaning Compound. Turco Products, Inc., Los Angeles, Calif. Filed December 16, 1938. Serial No. 413,919. Published October 10, 1939. Class 4.

Ertel Engineering Expands

Ertel Engineering Corp., liquid handling equipment, has moved to new and larger manufacturing quarters in Kingston, N. Y. The new factory consists of three buildings, one used for general manufacturing purposes, another for offices and a third for storage of raw materials and finished equipment.

Foreign Trade Opportunities

Interested American firms and individuals may obtain the names and addresses of the foreign firms making these inquiries upon application to the United States Bureau of Foreign and Domestic Commerce, referring to the File No. indicated.

F.T.C. Report To Congress

The Federal Trade Commission recently submitted its twenty-fifth annual report to Congress, with a special chapter devoted to consumer protection, a Commission activity which has increased in volume and effectiveness since enactment of the Wheeler-Lea Act. In its chapter on "Consumer Protection" the Commission points out that its functioning is directly concerned with affording protection to the purchasing public, as well as to business, from the destructive effects of harmful trade practices, such as unfair methods of competition, deceptive selling practices and monopolistic restraints. (It is from this function that many of the "cease and desist" orders in the soap and sanitary chemicals industry originate.) During the fiscal year the Commission made 1,650 preliminary investigations, issued 370 complaints and served 288 orders to cease and desist. A total of 241 complaints alleged false and misleading representations in advertisements, on labels and otherwise, according to the report.

Shows Movie On Perfumes

Dr. Ernest Guenther, chief research chemist, Fritzsche Bros., New York, showed several reels of colored motion pictures on the production of various essential oils before the Cosmetic Section of the Women's Fashion Group on December 11. Dr. Guenther made several introductory remarks prior to the showing of the picture, which he entitled "The Romance of Perfumes."

4989	Toilet soaps and tooth paste	Batavia, Java	purchase or agency
4971	Soft soap (green soap)	Singapore, Straits Settlement	purchase and agency
5019	Soaps, cleansing powder and polishes	Reykjavik, Iceland	agency
5223	Liquid disinfectants	Alexandria, Egypt	agency
5100	Insecticides and disinfectants	Alexandria, Egypt	purchase and agency
5140	Perfumes essences	Rio de Janeiro, Brazil	agency
5200	Soaps, shaving creams and tooth pastes	Cairo, Egypt	agency
5242	Insecticide spray for citrus trees	Alexandria, Egypt	agency
5368	Soaps	Guayaquil, Ecuador	agency
5252	Blue mottled soap	Curacao, Netherland West Indies	purchase
5245	Toilet soaps and tooth paste	Cairo, Egypt	agency

Raw Material Markets

As of December 26, 1939

NEW YORK — Numerous price changes characterized the soap and sanitary chemical raw material market this period, although no definite trend was established. Of particular interest to soapmakers was the announcement that there would be no advance in the price of alkalies during 1940. There were no price changes in the insecticide raw materials market and only one change in the aromatic chemicals market. Prices in the gums list showed slight reductions while various items in the wax list moved upward.

CHEMICALS

Alkalies

Prices for caustic soda and soda ash have been extended for less-than-carload quantities over the 1940 delivery period, according to an announcement this period by Solvay Sales Corp., New York. Flake caustic soda, less-than-carload lots in drums, will be $3.55 per 100 lbs.; solid caustic will be maintained at $3.15, and light soda ash will be maintained at $2.08 in bags and $2.35 in barrels. Demand for alkali has been brisk since the outbreak of the war, although some slackening has taken place during the period under review.

Cresylic Acid

Cresylic acid prices moved sharply upward this period as new schedules for the first quarter of 1940 went into effect. Both high and low boiling grades of the acid advanced about 10 cents per gallon, bringing a new range of 68 to 70 cents per gallon. Toward the end of the period, inquiry in this market became light, but shipments remained steady against orders placed earlier.

Rosin

Price movements in the rosin market were at a minimum this period. Although domestic business slowed down, movements to consumers and dealers on contracts held up well for this period of the year when buyers are not inclined to add materially to their holdings. Wood rosin moved upward in price from a range of $4.35 to $6.00 per bbl. to $4.60 to $6.25 per bbl.

OILS AND FATS

Coconut Oil

Prices in the coconut oil market continued their downward movement this period, Manila crude being shaded 1/8 cent per pound. Sales of tanks, New York, are now taking place at 3 5/8 cents per pound as compared to 3 3/4 cents per pound last period. Prices on the Pacific Coast for tanks, futures, were also shaded 1/8 cent and now stand at 3 3/8 cents per pound. In the earlier part of this period, quotations on the New York oil had dropped as low as 3 3/8 cents but due to a recent typhoon the range moved slightly upward. According to reports, damage in the coconut areas by the typhoon was not considered serious.

Linseed Oil

Linseed oil prices were advanced sharply this period by local crushers owing to a rise in foreign and domestic flaxseed quotations which followed the announcement of a further reduction in the Argentine crop. The indicated crop is much below expectations earlier in the season, the decrease being attributed to excessive rainfall, low temperatures and frosts. Prices on various grades of the oil advanced 1-1/10 cents per pound.

Olive Oil

Further reductions in the price of olive oil were noted this period, the new prices being $1.00 to $1.05 per gal. for the denatured oil in New York, and 8 1/2 to 8 3/4 cents per pound for foots. This compared with last period's quotations of $1.05 to $1.15 for the oil, and 9 to 9 1/2 cents per pound for foots. Consular advices from Spain point to a lower output of olive oil than the average for the past several years.

Tallow

Tallow prices dropped 1/4 cent per pound this period, special being quoted at 5 5/8 cents per pound and extra at 5 3/4 cents per pound. Only small sales were noted this period as large consumers were holding off for further developments in the market. Offerings, on the whole, were light.

PERFUMING MATERIALS

Citronella Oil

Java citronella oil moved sharply upward in price this period while Ceylon oil maintained its firm tone of the previous period. The Java oil is being quoted at 44 to 46 cents per pound as compared to 39 and 40 cents per pound last period. The price of the Ceylon oil is 46 to 47 cents per pound. Demand in this market was reported very good and somewhat broader.

Geranium Oil

Prices in the geranium oil market were a great deal easier this period as prices on the African and Bourbon oils were lowered as much as 50 cents per pound in some quarters. Both of these oils are now quoted at $2.75 to $3.10 per pound as compared to $3.25 to $3.50 per pound last period. The Turkish oil remained stationary in price this period at $2.75 per pound.

Standard Synthetics Enlarges

Standard Synthetics, Inc., New York, have recently enlarged their general offices and plant at 39 West 32nd Street. The company also maintains a warehouse and office in Kansas City and other branches in Chicago, Philadelphia, Boston and St. Paul.

Raw Material Prices

(As of Dec. 26, 1939)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P. drums	lb.	$ .07¼	$ .07¾
Acid, Boric, bbls., 99½%	ton	106.00	138.00
Cresylic, drums	gal.	.68	.70
Low boiling grade	gal.	.68	.70
Muriatic, C. P., carboys	lb.	.08	—
Oxalic, bbls.	lb.	.10¾	.12
Adeps Lanae, hydrous, bbls.	lb.	.29	.30
Anhydrous, bbls.	lb.	.30	.31
Alcohol, Ethyl, U.S.P., bbls.	gal.	4.56½	4.59½
Complete Denat., SD 1, drums, ex.	gal.	.28½	.30½
Alum. Potash lump	lb.	.04	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., bbls.	lb.	.08	—
Bentonite, 1, works	ton	—	16.00
Bentonite, 2, works	ton	—	11.00
Bleaching Powder, drums	100 lb.	2.25	3.35
Borax, pd., cryst., bbls., kegs	ton	58.00	74.00
Carbon Tetrachloride, car lots	gal.	.66½	1.10
L. C. L.	gal.	.73	1.17
Caustic, see Soda Caustic, Potash Caustic			
China Clay, filler	ton	10.00	25.00
Cresol, U.S.P., drums	lb.	.09¾	.10¾
Creosote Oil	gal.	.13½	.14½
Feldspar (200 to 325 mesh)	ton	14.00	15.00
Formaldehyde, bbls.	lb.	.05¾	.06¼
Fullers Earth	ton	10.00	32.00
Glycerine, C. P., drums	lb.	.12½	.13
Dynamite, drums	lb.	—	Nom.
Saponification, drums	lb.	.08¾	.09
Soap, lye, drums	lb.	.07¾	.08¾
Hexalin, drums	lb.	.80	—
Kieselguhr, bags	ton	—	35.00
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	per bbl.	—	2.45
Mercury Bichloride, kegs	lb.	1.89	2.04
Naphthalene, ref. flakes, bbls.	lb.	.06¾	—
Nitrobenzene (Mirbane) drums	lb.	.08	.09
Paradichlorbenzene, bbls., kegs	lb.	.12½	.15½
Petrolatum, bbls. (as to color)	lb.	.04	.07½
Phenol (Carbolic Acid), drums	lb.	.13	.13¾
Pine Oils, bbls.	gal.	.52	.59
Potash, Caustic, solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03⅛	.03¾
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.03	.03½
Pumice Stone, powder	100 lb.	3.50	4.50
Rosins (600 lb. bbls. gross for net)—			
Grade B to H, basis 280 lbs.	bbl.	5.25	6.50
Grade K to N	bbl.	6.70	6.75
Grade WG to X	bbl.	6.90	7.45
Wood	bbl.	4.60	6.25
Rotten Stone, pwd. bbls.	lb.	.08½	.10
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04⅛	.04½
Olive Castile, bars	lb.	.17	—
Olive Castile, powder	lb.	.30	—
Powdered White, Neutral	lb.	.19	.22
Olive Oil Foot, bars, 68-70%	lb.	.11	—
Green, U.S.P.	lb.	.09	—
Tallow Chips, 88%	lb.	.08¼	—
Soda Ash., cont., wks., bags, bbls.	100 lb.	1.08	1.35
Car lots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	2.30	—
Flake	100 lb.	2.75	—
Liquid, tanks, 47-49%	100 lb.	1.95	—
Soda Sal., bbls.	100 lb.	1.10	1.30
Sodium Chloride (Salt)	ton	15.00	15.60
Sodium Fluoride, bbls.	lb.	.07	.08¼
Sodium Hydrosulfite, bbls.	lb.	.16	.17
Sodium Metasilicate, ground	100 lb.	2.20	3.15
Crystalline	100 lb.	2.90	—
Sodium Pyrophosphate	100 lb.	5.10	5.55
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.21	.28
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	lb.	.022	.028
Zinc Oxide, lead free	lb.	.06⅛	.07¾

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.06⅝	Nom.
Castor, No. 1, bbls.	lb.	.13¼	.14
No. 3, bbls.	lb.	.12¼	.13
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.03⅝	—
Tanks, Pacific Coast, futures	lb.	.03⅜	—
Copra, bulk, coast	lb.	.02	—
Corn, tanks, mills	lb.	.06¼	.08¾
Cottonseed, crude, tanks, mill	lb.	.06	.06⅛
PSY, futures	lb.	.07	.0790
Fatty Acids,			
Corn Oil, tanks	lb.	.09½	.09¾
Coconut Oil, tanks	lb.	.10	.10¼
Cotton Oil, tanks	lb.	.08¼	.08½
Settled soap stock	lb.	.03¼	.03½
Boiled soap stock, 65%	lb.	.04¼	.04½
Foots, 50%	lb.	.01⅝	.01⅞
Linseed Oil	lb.	.11½	.12½
Red Oil, bbls., dist. or sapon.	lb.	.08½	.09½
Tanks	lb.	.08	—
Stearic Acid,			
Double pressed	lb.	.12	.13
Triple pressed	lb.	.14¾	.15¾
Greases, choice white, bbls.	lb.	.05⅝	.06
Yellow	lb.	.05¼	.05½
Lard, city	lb.	.07	.07¼
Linseed, raw, bbls.	lb.	.1080	.1110
Tanks, raw	lb.	.1020	.1050
Boiled, 5 bbl. lots	lb.	.1180	.1210
Olive, denatured, bbls., N. Y.	gal.	1.00	1.05
Foots, bbls., N. Y.	lb.	.08½	.08¾
Palm, shipment	lb.	No Prices	
Palm, Kernel, shipment	lb.	No Prices	
Sesame Oil, dms.	lb.	.12	—
Soya Bean, domestic, tanks, crude	lb.	.06½	—
Stearine, oleo, bbls.	lb.	.06¾	.07
Tallow, special, f.o.b. plant	lb.	.05⅝	—
City, ex. loose, f.o.b. plant	lb.	.05¾	—
Teaseed Oil, crude	lb.	.12½	—
Whale, refined	lb.	.0910	—

(As of Dec. 26, 1939)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$2.00	$2.10
Bitter, F. F. P. A.	lb.	2.10	2.20
Sweet, cans	lb.	1.00	1.25
Anise, cans, U.S.P.	lb.	.73	.78
Bay, tins	lb.	1.20	1.35
Bergamot, coppers	lb.	4.00	4.25
Artificial	lb.	1.25	1.30
Birch Tar, rect. tins	lb.	.75	.80
Crude, tins	lb.	.25	.26
Bois de Rose, Brazilian	lb.	1.60	1.65
Cayenne	lb.	1.50	1.75
Cade, cans	lb.	.55	.60
Cajeput, native, tins	lb.	.61	.62
Calamus, tins	lb.	8.00	8.25
Camphor, Sassy, drums	lb.	.33	Nom.
White, drums	lb.	.50	Nom.
Cananga, native, tins	lb.	1.60	1.65
Rectified, tins	lb.	2.10	2.15
Caraway Seed	lb.	3.00	3.25
Cassia, Redistilled, U.S.P.	lb.	1.20	1.25
Cedar Leaf, tins	lb.	.95	1.00
Cedar Wood, light, drums	lb.	.28	.30
Citronella, Java, drums	lb.	.44	.46
Citronella, Ceylon, drums	lb.	.46	.47
Clove, U.S.P., tins	lb.	1.38	1.43
Eucalyptus, Austl., U.S.P., cans	lb.	.61	—
Fennel, U.S.P., tins	lb.	2.25	2.50
Geranium, African, cans	lb.	2.75	3.10
Bourbon, tins	lb.	2.75	3.10
Turkish	lb.	2.75	3.00
Hemlock, tins	lb.	1.00	1.25
Lavender, U.S.P., cans	lb.	2.50	5.30
Spike, Spanish, cans	lb.	1.20	1.25
Lemon, Ital., U.S.P.	lb.	3.20	4.00
Cal.	lb.	3.00	—
Lemongrass, native, cans	lb.	.85	.90
Linaloe, Mex., cases	lb.	1.50	1.60
Nutmeg, U.S.P., tins	lb.	1.90	1.95
Orange, Sweet, W. Ind., tins	lb.	2.45	2.50
Italian cop	lb.	3.00	3.75
Distilled	lb.	.90	—
California	lb.	1.50	—
Origanum, cans, teach	lb.	1.10	1.65
Patchouli	lb.	4.50	5.00
Pennyroyal, dom.	lb.	3.00	3.10
Imported	lb.	2.75	2.80
Peppermint, nat., cans	lb.	2.75	3.00
Redis., U.S.P., cans	lb.	3.00	3.25
Petitgrain, S. A., tins	lb.	1.15	1.20
Pine Needle, Siberian	lb.	1.25	1.35
Rosemary, Spanish, tins	lb.	.75	.80
drums	lb.	.70	.75
Sandalwood, E. Ind., U.S.P.	lb.	5.25	5.50
Sassafras, U.S.P.	lb.	1.20	1.25
Artificial, drums	lb.	.75	—
Spearmint, U.S.P.	lb.	2.00	2.10
Thyme, red, U.S.P.	lb.	1.35	1.40
White, U.S.P.	lb.	1.75	1.80
Vetivert, Bourbon	lb.	3.35	18.00
Ylang Ylang, Bourbon	lb.	5.75	6.50

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.30	$1.45
Amyl Cinnamic Aldehyde	lb.	2.00	2.25
Anethol	lb.	1.05	1.15
Benzaldehyde, tech.	lb.	.55	.60
U.S.P.	lb.	.85	.95
Benzyl, Acetate	lb.	.44	.49
Alcohol	lb.	.63	.68
Citral	lb.	1.40	3.10
Citronellal	lb.	.75	.80
Citronellol	lb.	1.60	1.85
Citronellyl Acetate	lb.	4.50	7.00
Coumarin	lb.	2.75	4.65
Cymene, drums	gal.	.90	1.25
Diphenyl oxide	lb.	.50	.55
Eucalyptol, U.S.P.	lb.	.85	Nom.
Eugenol, U.S.P.	lb.	2.25	3.30
Geraniol, Domestic	lb.	.60	3.00
Imported	lb.	2.00	3.00
Geranyl Acetate	lb.	1.20	2.50
Heliotropin	lb.	3.00	3.20
Hydroxycitronellal	lb.	2.00	2.50
Indol, C. P.	oz.	2.00	2.13
Ionone	lb.	2.50	4.15
Iso-Eugenol	lb.	3.00	4.25
Linalool	lb.	2.10	3.30
Linalyl Acetate	lb.	2.50	2.75
Menthol	lb.	3.00	3.35
Methyl Acetophenone	lb.	2.50	3.00
Anthranilate	lb.	2.10	2.30
Paracresol	lb.	4.50	6.00
Salicylate, U.S.P.	lb.	.35	.37
Musk Ambrette	lb.	3.65	3.95
Ketone	lb.	3.70	4.10
Xylene	lb.	1 05	1.20
Phenylactaldehyde	lb.	2.10	2.50
Phenylacetic Acid	lb.	1.75	3.00
Phenylethyl Alcohol	lb.	2.50	3.35
Rhodinol	lb.	5.55	10.80
Safrol	lb.	.70	.75
Terpineol, C. P., 1000 lb. drs.	lb.	.25	—
Cans	lb.	.28	—
Terpinyl Acetate, 25 lb. cans.	lb.	.82	.85
Thymol, U.S.P.	lb.	1.55	1.60
Vanillin, U.S.P.	lb.	2.50	2.65
Yara Yara	lb.	1.25	1.55

Insecticide Materials

Insect Powder, bbls.	lb.	.35	.37
Pyrethrum Extract			
5 to 1	gal	1.80	1.85
20 to 1	gal.	6.75	7.00
30 to 1	gal.	10.15	10.25
Derris, powder—4%	lb.	.18	.24
Derris, powder—5%	lb.	.24	.30
Cube, powder—4%	lb.	.20	.22
Cube, powder—5%	lb.	.24	.26

Gums

Arabic, Amb. Sts.	lb.	.17½	.18
White, powdered	lb.	.20½	.21
Karaya, powdered No. 1	lb.	.14	.23
Tragacanth, Aleppo, No. 1	lb.	2.50	Nom.
Flake	lb.	No Prices	

Waxes

Bees, white	lb.	.38	.39
African, bgs.	lb.	.27	.27½
Refined, yel.	lb.	.31	.36
Candelilla, bgs.	lb.	.18½	.19
Carnauba, No. 1	lb.	.76	.80
No. 2, N. C.	lb.	No Prices	
No. 3, Chalky	lb.	.45	.47
Ceresin, yellow	lb.	.13	.15
Paraffin, ref., 125-130	lb.	.0675	.0680

Production Section

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries.*

Toilet Soap Texture

TOILET soaps are frequently marred by striations or irregularities in texture. A new method overcomes this and produces a hard, partially dried soap free from striations and air pockets by a continuous and economic process, giving a homogeneous smooth bar adapted for conversion into cakes of finished soap by a single stamping operation.

In the drying of kettle soaps by the usual method of cooling on rolls, cutting into ribbons and passing through a drying chamber, hard particles often form. These are small specks of soap from which a larger proportion of water is removed than from the bulk of the soap. They form partly because the edges of the soap ribbons tend to lose more water than the center portions and partly because in handling the ribbons, it is virtually impossible to avoid a certain amount of breakage with the formation of small chips which become overdried. These hard particles are frequently caused by improper storage, which allows exposure of a portion of the soap to dry air. These hard specks which generally make the soap gritty are crushed to such a small size that they are no longer noticeable, by passing the soap through milling rolls. By setting the clearance of the last set of milling rolls to a few thousandths of an inch, all the hard particles are reduced to such an extent that they do not impart a harsh texture to the final soap.

In the usual process by which soap is mixed with perfume, formed into filaments of much less bulk than the flakes of milled soap and then fed to a plodder screw which forces the compacted mass through an orifice as a continuous bar, the extruded bar is frequently marked by striations or irregularities in texture. These are caused by the inclusion of air in the soap. They are particularly noticeable in colored soap but are apt to be present in all milled or partially dried soap. The striations are somewhat reduced by passing the soap through a screen before extrusion, but are present to some extent whether the soap is screened or not.

A new treatment is to force the soap which has been milled and converted into a plastic homogeneous product free from objectionable hard parts, through a screen, further to make it compact in the form of relatively dense filaments, and then to pass these filaments through a vacuum chamber which removes all of the air from the mass. The soap is extruded or plodded while still under vacuum. The screening operation to which the milled soap is subjected serves the dual purpose of removing all foreign materials from the soap and of reducing the bulk of the soap so that the removal of entrapped air is greatly simplified. It also serves to levigate the soap to a certain extent and to make it more compact. The screen orifices measure preferably 12-15 thousandths of an inch.

The vacuum chamber is conveniently provided by placing a metal hood over the exit end of the screen and over the hopper of the plodder and connecting the included space to a vacuum pump. The screen and nozzle of the plodder are kept full of soap to prevent the entrance of air at these points. The vacuum is preferably 27 inches of mercury below atmospheric pressure. Colgate-Palmolive-Peet Co. British Patent 512-551; through *Perfumery & Essential Oil Record* **30,** 398-402 (1939).

—— ♦ ——

The extent of hydrogenation of soybean oil with various catalysts was followed by means of a coulometer connected in series with an electrolytic hydrogen generator. Copper-nickel formates prepared by the action of formic acid upon a 1:1 mixture of the carbonates gave an active catalyst suspension at 200°C., while a mechanical mixture of the individual formates gave a coarse catalyst suspension of weak activity. Silver-nickel formates gave a catalyst which was inferior to that produced from the above copper-nickel formates. E. Yamaguti, M. Yamada and S. Nakayama. *J. Soc. Chem. Ind.*, Japan **42,** Suppl. binding 215-18 (1939); through Chem. Abs.

Autoxidation of Fats

An apparatus for the study of the autoxidation of fats and related materials has been designed to permit the collection and analysis of the various volatile products formed in the reaction, the measurement of the oxygen consumption, and analysis of the oxidation residue.

Oleic acid, oleyl alcohol, methyl oleate, butyl oleate and *cis*-9-octadecene appear to be autoxidized in a similar manner to yield the same types of products — among others, peroxides, peracids, aldehydes, substituted ethylene oxides, acids, alcohols, combinations of these, and water.

After the addition of oxygen to form peroxides at the ethylene linkage, these peroxides may cleave to give aldehydes; they may react with another double bond to give two moles of ethylene oxide, or they may aid in the further oxidation of the carbon chain. The aldehydes formed also autoxidize to give peracids and acids. Oxido derivatives are among the main products of the autoxidation process. When oleic acid is oxidized, oxidooleic acid does not appear as such but is apparently converted to half esters of dihydroxy stearic acid. The oxido derivatives are all of the some geometric configuration and correspond in each case to the high-melting dihydroxy isomeric derivative of the original substrate.

The oxygen consumption per mole of double bond destroyed is least for oleic acid, most for oleyl alcohol. The amount of oxygen consumed is about the same for methyl oleate and *cis*-9-octadecene. In each case, about one-fourth of the oxygen taken up appears as water. F. E. Deatherage and H. A. Mattill. *Ind. Eng. Chem.* **31,** 1425-31 (1939).

—— ♦ ——

Wax Saponification Value

The troublesome determination of the saponification value of waxes is greatly improved by the addition of toluene, which is miscible with alcohol in all proportions. To 2 grams of wax in an Erlenmeyer flask add exactly 10 cc. of toluene and warm gently until the wax has dissolved. Add 25 cc. of 0.7 Normal alcoholic potassium hydroxide solution containing approximately 39 grams of potassium hydroxide per liter. Attach the flask and a blank containing no wax to reflux condensers and boil gently for 2 hours. Add phenolphthalein to each and titrate. The difference between the blank and the sample measures the amount of standard potassium hydroxide consumed in the saponification; 1 cc. of 0.5 Normal hydrochloric acid is equivalent to 28.06 mg. of potassium hydroxide. Merlin Wand. *Chemist-Analyst* **28,** 53-4 (1939).

—— ♦ ——

Neutralization of Fatty Oils

Shaking for 15 minutes with absolute alcohol removed but 38-58 per cent of free fatty acids. Shaking with crystalline sodium carbonate for 24 hours removed 68-96 per cent of the free fatty acids. Neutralization changed the ester number, saponification number and iodobromine number. Zsigmond Bari. *Ber. ungar. pharm. Ges.* **15,** 461-75 (1939); through Chem. Abs.

—— ♦ ——

Action of Fuller's Earth

A systematic study was made of the decolorization of plant oils with fuller's earth. The results did not agree with the Boedeker adsorption isotherm. Although a part of the colored ingredients are removed by purely physical adsorption, the rest are apparently removed by definite chemical combination with exchangeable hydrogen of the earth. B. S. Kulkarni and S. K. K. Jatkar. *Kolloid-Zeitschrift* **89,** 54-9 (1939).

—— ♦ ——

Mustard Seed Oil

Mustard oil is a clear bright yellow oil expressed from the seeds of three varieties of plants, but in India mostly from black mustard. An analysis of black mustard oil shows 3.8 per cent of free fatty acids, 92 per cent of fatty acid glycerides, and 0.8 per cent of unsaponifiable matter. It is high in oleic, erucic and linoleic acids. Because of price the oil is chiefly used at the present time for food purposes. However on saponification with 40 per cent aqueous caustic soda solution, mustard oil forms very easily a hard pale yellow soap which can be made perfectly neutral and which has excellent lathering and detergent properties. In this respect it behaves more like a stearin soap than like an olein or oleopalmitin soap, probably because of the large proportion of erucic acid present, which acts more like a saturated acid on saponification. The soap is free from the characteristic odor of the oil but has a tendency to become slightly more yellow on keeping. S. Dutt. *Indian Soap J.* **5,** 279-85 (1939).

—— ♦ ——

Sulfur Soap

Milk of sulfur finely dispersed in soap is more useful and effective than an addition of flowers of sulfur dispersed in the soap. Jar. Hojka. *Ceskoslov. Mydlar Vonavkar* **16,** 100-1; through Chem. Abs.

—— ♦ ——

Rancidity in Edible Fats

By C. H. Lea, published by Chemical Publishing Co., New York. Contains 230 pages (5½x8½ inches). Price, $4.00. A report which presents an account of the current state of knowledge concerning the development of rancidity in edible fats and fat-containing foods. It explains in full the "how and why" of rancidity, oxidation and spoilage of fats, oils and dairy products. Emphasis has been laid chiefly on the more scientific aspects of the problem, but details of methods likely to prove of practical value in the diagnosis and correction of faults have also been included. The book is divided into six parts, (1) The chemistry of fats, (2) Rancidity: occurrence and types, (3) The lesser causes of rancidity, (4) The action of micro-organisms on fats, (5) The deterioration of fats by atmospheric oxidation, which is sub-divided into nine sections, and (6) Rancidity in dairy-products and in the fat of meat. A subject index in the back of the book provides easy and handy reference.

Factors in Fat Splitting

A CAREFUL study of the splitting of fats in an autoclave with a small amount of alkali to serve as catalyst leads to interesting conclusions. A small laboratory autoclave was used which was tipped mechanically every other second. The mixture of fat, water and catalyst was drawn in by suction to the previously evacuated autoclave. The temperature was brought to 185°C. with the apparatus at rest during the course of a half hour. Beef tallow with an acid number of 14, corresponding to a free fatty acid content of 6.8 per cent, was used. Most of the experiments were carried out with the use of 0.5 per cent caustic soda which was completely neutralized by the free fatty acids present. The soap formed combined with excess fatty acids to give acid soap which remained in the fat phase for the most part.

In one series of experiments the temperature was varied from 150° to 220°C., using 60 per cent of water and 0.5 per cent of caustic soda with the fat. The speed of reaction was increased by an increase in temperature, but the final degree of fat splitting was the same for the upper temperatures, 90-91 per cent. At 220° this equilibrium condition was reached in 3 hours, at 200° in 5 hours, and at 185° in 8 hours.

In a second series of experiments the percentage of water was varied from 20 to 200 per cent, using 0.5 per cent of caustic soda at 185°C. The speed of the reaction is not influenced by increasing amounts of water but the final equilibrium is. At the end of 8 hours 60 per cent of water gave 90 per cent of fat splitting. 100 per cent of water gave 94 per cent, and 200 per cent of water gave 95 per cent. A higher degree of splitting can therefore be brought about by an increase in the proportion of water present.

The amount of catalyst was varied from 0.25 to 1 per cent of caustic soda. Increase in the amount of catalyst caused an increase in the speed of reaction, although the final state of equilibrium was about the same, the fat being 90.5 per cent split at the end of 8 hours with 0.5 per cent caustic soda and 92.5 with 1 per cent of caustic soda. However the 1 per cent caustic gave about the same degree of splitting at the end of 5 hours as after 8 hours' autoclaving.

The effect of using a number of different alkaline catalysts with 60 per cent water and at a temperature of 185° was studied. Caustic soda, zinc oxide, calcium oxide, magnesium oxide, caustic potash, lithium hydroxide and ammonia were used in equivalent amounts based on 0.5 per cent of caustic soda. This was so that chemical reaction with free fatty acids would progress to the same extent in each case. The speed of the reaction was greatly affected by the nature of the catalyst, although the final equilibrium of 90-91 per cent of split fat was reached at the end of 8 hours except with the use of ammonia and of water alone, when the values were only about 86 per cent. Zinc oxide was by far the most active splitting agent, giving nearly the same amount of splitting in 3 hours as in 8 hours. Next came magnesium oxide, then calcium oxide, lithium hydroxide, caustic soda and caustic potash. Ammonia was not much more effective than water alone.

In another series zinc oxide was combined with caustic soda in proportions of 75:25, 50:50, and 25:75, the total corresponding to 0.5 per cent of catalyst. The combinations did not speed up the reaction as much as did zinc oxide alone, but were more effective than would be indicated by the proportionate amounts in the mixtures. The more active catalyst had a greater influence than the less active. For example, the 75:25 mixture was nearly as efficient as zinc oxide alone, while the 50:50 mixture was better than half way between zinc oxide and caustic soda, results shown much more clearly by the curves than by mere description.

It has been assumed that catalytic fat splitting is a heterogeneous process taking place at the surface of contact between fat and water phases. If this were the case one would expect that reaction would be greatest during the period of greatest emulsification, as the surface of contact is then at a maximum. Under the conditions described above, emulsification is the greatest at the beginning of the reaction when the speed of reaction is relatively slow. As more fatty acids are separated emulsification becomes less. This was confirmed by actual tests in which fat containing 20 per cent of free fatty acids could be emulsified at 100°C. with water containing 0.5 per cent of caustic soda based on the amount of fat used. With 40 per cent of free fatty acids mixing was incomplete. With 60 per cent of free fatty acids no emulsion was formed but fat and water remained completely separated. The speed of reaction is not greatest during maximum emulsification so therefore a homogeneous reaction must occur either in the water or in the fat phase, or possibly in both.

Experiments described showed that the speed of reaction is independent of the amount of water used. If the reaction occurred in the water phase it would speed up when a greater proportion of water was present. Therefore the solubility of water in fats and fatty acids appears to be the significant factor. Commercial fats always contain measurable amounts of water in true solution, not in emulsion form, as shown by the complete clarity of the melted fat. Splitting reaction therefore probably occurs in the fat phase. The acid soaps formed with the alkaline catalyst are soluble in fatty acids. An explanation of the activity of the catalyst lies in its ability to increase the solubility of water in the fat. Direct measurement of the solubility of water in anhydrous fat at 100°C. showed that the water was very much more soluble in fat in the presence of zinc oxide than in its absence.

The period of rapid fat-splitting is therefore believed to correspond to the period of maximum solubility of water in the fat phase. As the reaction approaches equilibrium the glycerine formed decreases this solubility and the reaction slows down. This new explanation seems to agree with all of the observed facts. L. Lascaray. *Fette und Seifen* **46,** 628-32 (1939).

—— ♦ ——

Cationic Textile Aids

Cation-active compounds, which are becoming increasingly important in the textile field, may be divided into 3 types, all having nitrogen in the molecule. (1) Fatty acylated nitrogen compounds have the general formula $RCONHR_1$. Such compounds are insoluble in water but soluble in an acid medium, resulting in a colloidal type of dispersion. This type of product is immune to hard water, stable to acids, but precipitated by alkalies. Similar compounds are alkylated pyridine derivatives. Both of these are much more stable in the form of salts. (2) Pyridine salts are made by reacting alkyl halides such as cetyl bromide with pyridine. This gives the alkyl group attached directly to the nitrogen atom. (3) Quaternary ammonium derivatives are the oldest of the cation-active compounds classed as synthetic detergents and are fairly well known now.

The above types of compounds find many special applications in the textile industry, the purpose for which they are used depending on the substituted organic groupings. A new application is in the production of soft flexible permanent finishes with latex, made possible with the aid of cation-active compounds. A precaution in their use is to apply them at a point in the finishing process where anion-active compounds such as soap will not be used thereafter. The two are antagonistic—the anion of soap would combine with the cation to form a huge fatty molecule which would precipitate. Jacob Katz. *Am. Dyestuff Reporter* **28,** P671-4 (1939).

Products and Processes

Soapless Hand Cleaner

Paste hand cleansers are now made without any fat content for rough cleaning to replace the former paste hand soaps. For example 50 parts of sodium silicate are treated with 10 parts of a strong soda-ash or potash solution containing 1-2 per cent of a foaming agent such as saponin. A mixture of 40 parts of fine pumice powder, 20 parts of wood flour and 40 parts of colloidal clay such as bentonite is also prepared. The alkaline solution is worked up to a paste with a suitable amount of the powdered mixture. *Seifensieder-Ztg.* **66,** 792 (1939).

—— ♦ ——

Emulsifying Agent

Emulsifying agents are prepared by causing sulfuric acid or a sulfonic acid to react with a saturated primary monohydric alcohol and a thio ether. The reaction takes place in the presence of a dispersing agent such as gasoline, xylene or an excess of one of the reactants. Thus, dimethylcetylsulfonium *para*-toluene sulfonate is prepared by the action of *para*-toluenesulfonic acid on a mixture of methyl cetyl sulfide and methyl alcohol. N. V. de Bataafsche Petroleum Maatschappij. French Patent No. 840,778.

—— ♦ ——

Cleaning Tinware

The life of tin-coated equipment is usually more affected by cleaning operations than by normal service. Hot solutions of soda ash, trisodium phosphate, or sodium metasilicate, the usual cleaners, have little effect on tin except in conjunction with oxygen. As it is impracticable to exclude air in cleaning operations, the expedient of adding a reducing agent has been successfully adopted. Sodium sulfite is recommended and can be conveniently mixed in the proportion of 10-20 per cent with the alkaline salt to be used, before the cleaning solution is made up. Sodium sulfite is cheap, readily water-soluble and nontoxic. *Chem. Trade J. & Chem. Engineer* **105,** 364 (1939).

—— ♦ ——

Bentonite in Paste Soap

An exceedingly fluffy product can be made by incorporating bentonite in paste soap. A thick paste is first made by stirring bentonite with water in the proportion of 12 ounces of the clay per gallon of hot water. Melted soap is then stirred into the hot paste until the desired consistency is reached. A solution of trisodium phosphate can be added to increase detergency and in the case of hand soap, pumice, wood flour or similar abrasive. C. V. Cardew. Manufacturing Perfumer **4,** 338 (1939).

—— ♦ ——

Bisulfite Stabilizer

Accelerated keeping tests with hydrogenated deodorized cottonseed oil showed that addition of 0.25 cc. of a saturated solution of sodium bisulfite will increase the keeping time of 1500 grams of shortening about 48 hours and will lower its initial peroxide value about 77 per cent. The amount of saturated solution of bisulfate recommended is 0.022 per cent by weight, or 22 pounds of solution to 100,000 pounds of shortening. small amounts of sulfur dioxide. The fat so treated will contain very K. S. Hoover and H. E. Moore. *Oil & Soap,* **16,** 212-4 (1939).

—— ♦ ——

Seal oil often contains protein and protein decomposition products which interefere with its sulfonation, particularly if the temperature is allowed to rise above 20° C. during the sulfonation process. The temperature can be kept to this limit only by intensive cooling or by adding the sulfuric acid very slowly. Such materials are better removed before sulfonation by heating the oil with

bleaching earth and filtering through a filter press. The sulfonated product will then be much brighter, as protein materials are so readily carbonized by sulfuric acid that a light-colored product can scarcely be obtained if the proteins are not first removed. *Seifensieder-Ztg.* **66,** 802 (1939).

Glycerine Distillation

Glycerine is distilled by heating under subatmospheric pressure by indirect contact with saturated steam under pressure. Steam under lower pressure is injected directly into the glycerine, resulting in condensation of water from the saturated steam and vaporization of the glycerine. The pressure on the condensed water is reduced and the water brought into indirect contact with the hot vapors from the glycerine undergoing distillation so as to condense the glycerine vapors and generate steam from the water at a reduced pressure. The condensed glycerine is collected and the steam so generated, being free from objectionable volatile impurities, is injected into the glycerine to be distilled as the lower-pressure steam. Colgate-Palmolive-Peet Co. Canadian Patent No. 384,974.

Phosphate Textile Detergents

Raw linen is treated with a hot alkaline solution to remove gums and pectins. The usual agents employed are caustic soda and soda ash. Caustic soda has a strong action on the resins and splits the fats, but if the action is too strong the cellulose itself is attacked. For example the baths originally employed for linen yarns to be hank-dyed on a large scale in a modern factory consisted of 1 per cent of caustic soda and 6 per cent of soda ash. These were replaced by baths containing 1 per cent of trisodium phosphate and 5 per cent of soda ash with no caustic. The mode of operation was the same in both cases but the second treatment gave less loss in weight and less loss in yarn strength.

In bleaching wool with hydrogen peroxide, the best stabilizer for the peroxide is sodium pyrophosphate, or in certain cases a mixture of equal parts of pyrophosphate and trisodium phosphate. The concentration of pyrophosphate necessary is 1-3 grams per liter of bleach bath. Silk is also bleached with hydrogen peroxide, and as in the case of wool, pyrophosphate alone or admixed with trisodium phosphate is used as stabilizer. Hotter and more concentrated baths may be necessary, as silk is less sensitive than wool to alkaline reaction. G. S. Ranshaw. *Chem. Age* **41,** 299-300 (1939).

New Use of Fatty Derivatives

Fatty acid derivatives can be employed in the preparation of synthetic resins to give them distinctive properties particularly with respect to flexibility. Resin-forming compounds such as styrene, coumarone, indene, phenol, etc., can be caused to react with high molecular-weight fatty acid chlorides in the presence of aluminum chloride or other Friedel-Crafts catalysts to produce acylated compounds which can then be polymerized by heat or catalysts to give resins. These resins possess a variety of properties dependent on the degree of acylation and the type of acyl group which is introduced. Stearoyl chloride is an example of acylating agent. Since the need for flexible resins is increasing it is predicted that these products have a future. Anderson W. Ralston. *Oil & Soap* **16,** 215-8 (1939).

Soybean Oil Hydrogenation

Soybean oil was hydrogenated with a zinc-chromium catalyst under high pressure. Higher alcohols, mainly oleyl, were produced at 300-400°C. with an iodine value over 110°C. When soybean oil was hydrogenated under higher pressure, water was produced below 300°C. Much free fatty acid was produced at high temperatures and a high pressure. There were critical points in the curves of temperature against acid value, against neutralization value of the saponified product, an acetyl value of the saponified product. The temperature for the production of higher alcohols was the same for free fatty acid as for the oil. From these facts it may be that the mechanism of the production of higher alcohols is the hydrolysis of ester and the reduction of the fatty acid produced.

When soybean oil was treated with hydrogen and a zinc-chromium catalyst at 320-40°C. for 6-10 hours, the production of unsaturated fatty acid was at a maximum. When ammonium chromate-zinc complex compound was heated at 450°C. or a mixture of chromic oxide and zinc oxide at 550°C., a good catalyst was obtained. The activity of the catalyst was greatest when the ratio of chromic oxide to zinc oxide was 1:1. Yuiti Sinozaki et al. *J. Agr. Chem. Soc. Japan* **14,** 1113-16; 1117-22, 1123-8, 1129-34; through Chem. Abs.

Paraffin Fatty Acids

Fatty acid mixtures obtained by the commercial oxidation of paraffin contain as a rule all the products obtainable by breaking the carbon to carbon linkage between each adjacent pair of CH_2 groups and oxidizing them to carboxyl groups. The composition of such fatty acid mixtures suggests that the CH_2 groups nearer the center of the paraffin chain are the ones most prone to oxidation. The usual analytical methods are suitable for determining the iodine, hydroxyl, ester and carbonyl numbers of the fatty acid mixtures. G. Wietzel. *Fette und Seifen* **46,** 21-5 (1939).

Treating Palm Oil

Instead of being hydrogenated, palm oil may be treated with alkali or with an adsorbent clay. Deodorization may be effected by distillation under reduced pressure with steam. Francis M. Sullivan. British Patent No. 505,210.

Acrolein Washing Agent

One molecule of the reaction product of sodium bisulfate and acrolein is condensed with 2 molecules of 4-diisobutylphenol to give an emulsifying and washing agent. J. R. Geigy A.-G. Swiss Patent No. 202,423.

for SOAP FLAKES

—leading mills throughout the United States and in Central and South America use chilled-iron, water-cooled

HOUCHIN MILLS

Type F Roller Mill

Rolls 18" x 40", water cooled. Heavy frames, large bearings. Gears run in oil. Gears and bearings entirely covered.

UP TO 1,000 POUNDS AN HOUR

—of flake soap .002 thick is regularly obtained with this fine, sturdy milling unit, which also has a capacity of up to 3,000 pounds an hour, when used as a mill for toilet soap .012 thick.

These mills can be furnished with capacities from 100 pounds an hour and up of .002 flake.

Send For Our Catalogue K

HOUCHIN MACHINERY CO., Inc.

Manufacturers of Soap Making Equipment

5th AND VAN WINKLE AVENUES

HAWTHORNE NEW JERSEY

Notes on Hydrogenation

FATTY acids with one double bond such as oleic acid are hydrogenated into saturated acids, in this case stearic acid. At the same time, part of the acid is isomerized. It is in this way that oleic acid forms a solid isomer, isooleic acid, probably by displacement of the double bond but perhaps more simply by stereoisomerism. The proportion in which this isomer is found depends undoubtedly on the conditions, two or even three hydrogenation reactions occurring simultaneously, isomerism and stereoisomerism, to which may be added hydrogenation of the isomers, all of these proceeding with different reaction velocities and having different temperature coefficients. With acids like linoleic acid containing more than one double bond, one of the bonds reacts first, then the other, but at least two isomers are formed in the first phase, and two others in the second.

Natural oils being mixtures undergo extremely complex changes during hydrogenation. The factors are temperature, pressure, activity of the catalyst, the state of its division if a powder or the nature of its surface if massive, degree of contact of the oil, hydrogen and catalyst, and time of contact. Recourse may be had to the controlled poisoning of a catalyst before its use in order to make a variation in the products, and even the use of promoters such as alkalies, and a mixture of other metals with nickel as catalyst.

When a fatty oil is hydrogenated, the least saturated acids are attacked first. At higher temperatures than those ordinarily used, few or none of the saturated acids are formed until the degree of unsaturation has been reduced to an average of a double bond per acid radical. In a mixture of free fatty acid and neutral oil, attraction of the catalyst and the carboxyl group leads to a preferential and selective hydrogenation of the free fatty acid.

Soap makers objected for a time to the use of hydrogenated oils because of the poor lather produced by soap made from them. This was attributed to the presence of the isomers referred to above. Progress made in the technique of soap manufacture, and a choice of oils giving smaller proportions of isomers has very largely overcome this prejudice.

The tendency in choice of catalysts is to employ the most robust rather than the most active, since the latter is most susceptible to poisoning. With cottonseed or with whale oil about 1000 cubic feet of hydrogen are required per ton of oil. Use of a powdered catalyst is necessarily much more expensive than use of a massive catalyst since the latter can be applied to a continuous system, the difference in cost being about twice as great with the powdered catalyst, independently of manual labor. The continuous system demands less labor and less ground space and involves fewer different operations. E. F. Armstrong and K. A. Williams. *Chem. Age* **41,** 271-2, 285-8 (1939).

—— ♦ ——

Oil Bleaching with Carbon

Two-stage bleaching of oil with activated carbon is more efficient than one-stage bleaching. The unbleached oil is treated first with partially used carbon and then filtered. The press cake (spent adsorbent) is rejected and the partially bleached oil treated with fresh carbon. This is then filtered giving a finished oil and the partially spent carbon. The latter supplies the adsorbent for treating a new batch of original unbleached oil. Used in this way 0.15 per cent of active carbon was equivalent to 0.25 per cent used in a single-stage bleach. These figures apply to an oil with an intermediate color of 2.6 red and a final color of 1.7 red, the saving in adsorbent being 40 per cent under these conditions. In bleaching to a final color of 0.8 red, 0.5 per cent of active carbon used in two stages was equivalent to 1 per cent used in a single stage, a saving in this case of 50 per cent. These figures were obtained with coconut oil. The process is not as favorable with fuller's earth as with activated carbon.

Application of the same principle to the bleaching of cottonseed oil depends somewhat on the extent to which the oil is to be bleached. Use of a 10:1 mixture of fuller's earth with activated carbon results in a greater per cent saving by this process of adsorbent than in the case of fuller's earth alone. John W. Hassler and Ralph A. Hagberg. *Oil & Soap* **16,** 188-191 (1939).

—— ♦ ——

Linseed Oil Analysis

Linseed oil was analyzed by two methods, one being dependent on the selective oxidation of unsaturated compounds, carried out with alkaline permanganate solution, —the other being a thiocyanate method. Comparison of results by the two methods shows good agreement, the following composition being found:

	Oxidation Analysis Per Cent	*Thiocyanate Analysis Per Cent*
Saturated Fatty acids	11.3	11.1
Oleic acid	13.2	13.3
Linoleic acid	44.1	42.8
Linolenic acid ...	31.7	32.8

The oxidation method of analysis is time-consuming and troublesome and requires special experience, so is of only scientific interest. The results serve to prove without doubt that thiocyanate analysis is satisfactory for fats containing linolenic acid. H. P. Kaufmann and H. Fiedler. *Fette und Seifen* **46,** 569-72 (1939).

—— ♦ ——

Coconut Oil Composition

Coconut oil has the following fatty acid composition in per cent by weight and molecular per cent respectively: caproic 0.8, 1.4; caprylic 5.4, 7.8; capric 8.4, 10.2; lauric 45.4, 47.2; myristic 18.0, 16.4; palmitic 10.5, 8.5; stearic 2.3, 1.7; arachidic 0.4, 0.2; hexadecenoic 1.3, 1.1; oleic 7.5, 5.5; and a trace of linoleic acid. Herbert E. Longenecker. *J. Biol. Chem.* **130,** 167-77 (1939).

For Definite Softening Effect

. . . . . WARNER TSPP

Outstanding property of TSPP as a water softener is its ability to inhibit precipitation of calcium, magnesium and iron compounds in water up to 5-grain hardness. Even *in harder* waters the tendency of the precipitated and suspended substances to adhere to objects being cleaned or equipment in use is markedly reduced by adding TSPP. It is often possible to replace up to 50% of more expensive water softening compounds with TSPP.

Warner pioneered the production of phosphates in America 54 years ago, had pilot plant production of TSPP almost 10 years ago and was making carload shipments 5 years ago. Today, Warner has not only adequate production capacity but also a solid background of technical experience in the use of TSPP.

Your inquiry will have immediate attention.

OTHER WARNER CHEMICALS

Tetra Sodium Pyrophosphate
Acid Sodium Pyrophosphate
Phosphoric Acid
Sodium Phosphates
(mono, di- and tri-basic)
Liquid Caustic Potash
Chlorine, Liquid
Sulfur Chloride
Carbon Tetrachloride
Trichlorethylene
Carbon Bisulfide
Sodium Sulfide
Blanc Fixe
Barium Carbonate
Epsom Salt
Hydrogen Peroxide
Alumina Hydrate, Light
Chemical Grade Magnesia

CHEMICAL **WARNER** COMPANY

DIVISION OF
WESTVACO CHLORINE PRODUCTS CORPORATION

CHRYSLER BUILDING, NEW YORK, N. Y.

New Equipment

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York, mentioning the number of the item.

654—New Mixer Hand Clamp

Mixing Equipment Co., Rochester, N. Y., has recently announced a new hand clamp to be used with the company's "Lightnin" portable mixers. Chief feature of the new clamp is said to be a double wedge with hand wheel which tightens the mixer more firmly and rigidly than with the older type clamp. Attaching and detaching mixers from mixing vessels is said to be speeded up by the newly designed clamp.

655—Govt. Contract Booklets

The Fidelity and Deposit Co. of Maryland, Baltimore, has recently published a third edition of "Matters of Procedure Under Government Contracts" written by O. R. McGuire, formerly counsel to the Comptroller General of the United States. The author discusses all phases of the contract; such as the bid, advertising, specifications, multiple bids, acceptance of the bid, default of bidder, etc. Under the contract itself, he covers rates of wages, hours of labor, liquidated damages and delays, and National Labor Relations Act to mention a few. One chapter is devoted to contracting agencies of the United States and another to contracts with government corporations, while two other parts of the booklet cover settlement of claims under government contracts and government sales. Copies are available.

656—Booklet on Rotenone Dusts

John Powell & Co., New York, have recently published a 27-page booklet consisting of an outline of uses and recommendations for rotenone dusts and sprays. In the introduction of the booklet several pages are devoted to a discussion of the source of rotenone as well as the composition of rotenone dusts and sprays, diluents, wetters, spreaders, etc. Under various agricultural products detail is given to the type insects which infest these particular products and the best methods of control. Copies are available.

657—Floor Maintenance Equip.

S. C. Lawlor Co., Chicago, has just published a new booklet on the "Lawlor" all steel floor maintenance equipment. Thirty-two pages are filled with descriptions and illustrations of the various models of wax-polishing machines, scrubbing machines, mopping tanks, etc. Specifications as to capacities, weight and dimensions are also given.

658—New Fumeral Literature

Fumeral Co., insecticide spraying equipment, Racine, Wis., has reported that its new 1940 literature covering complete information on both portable and stationary diffusers is available to jobbers and manufacturers. Copies may be obtained by writing to the company.

659—New Ingaclad Folder

Ingersol Steel and Disc Division of Borg-Warner Corp., Chicago, has recently published a booklet on the applications of its stainless clad steel. The uses of "Ingaclad" in various industries are illustrated and described. Copies are available.

660—Pipe & Fittings Folder

Walworth Co., New York, has issued a folder on Walworth "Ni-Resist" pipe and valves and fittings also made of "Ni-Resist." The folder lists the chemical properties of the pipe and suggests uses for general application. It also contains a table which compares the corrosion of the Walworth pipe against unalloyed cast iron pipe in various corrosive solutions. Copies of the folder are available.

661—Booklet on Abbe Mills

Abbe Engineering Co., New York, has just issued a new catalog (No. 49) which contains numerous illustrations and descriptions of Abbe pebble and ball mills, used for pulverizing, grinding and mixing. Charts are included in the catalog which show specifications and capacities of the various mills, while several pages are devoted to a discussion of their features. Copies are available.

662—Insecticide Booklet

General Chemical Co., New York, has issued a small booklet entitled "A Working Knowledge of Insecticides and Fungicides, What They Are, and How to Use Them." It covers stomach poisons, contact insecticides, repellents, sulfur fungicides, copper fungicides, etc. Copies are available.

663—Fritzsche Price List

Fritzsche Bros., Inc., New York, have recently issued a new wholesale price list which thoroughly covers their line of essential oils, aromatic chemicals and allied products. This price list is the first published by the Fritzsche company since Sept. 1, 1939.

Howard C. Russ Dies

Howard C. Russ, president of the Beach-Russ Engineering Co. and the Abbe Engineering Co., processing machinery, New York, died recently of heart disease at his home in Groton, Conn. He was 67 years old and was formerly advertising manager of the "Norwich Bulletin" of Norwich, Conn.

Agents For Chime Straightener

Steel Barrel Fittings Co., New York, is sales agent for various types of drum and barrel chime straighteners manufactured by Zetterlund Engineering Works, Milwaukee. Item No. 644 in the New Equipment Section of the December issue of SOAP failed to mention that fact.

New Patents

Conducted by

Lancaster, Allwine & Rommel

Registered Attorneys

PATENT AND TRADE-MARK CAUSES

402 Bowen Building, Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,176,894, Mothproofing, Patented October 24, 1939 by William H. Engels and John Weijlard, Rahway, N. J., assignors to Merck & Co., Inc., Rahway, N. J. A stable mothproofing solution containing triethanolamine silicofluoride, aluminum sulfate, and a wetting agent soluble in the solution, the solution being substantially free of uncombined silicic acid.

No. 2,178,694, Purifying Caustic Soda, Patented November 7, 1939 by Irving E. Muskat, Akron, and William F. Waldeck, Wadsworth, Ohio, assignors to The Pittsburgh Plate Glass Company, Allegheny County, Pa. The process of purifying sodium hydroxide which comprises concentrating an impure aqueous solution of sodium hydroxide substantially saturated with sodium chloride to a concentration such that the monohydrate will crystallize thereform, cooling to crystallize a substantial quantity of both relatively coarse hydrated sodium hydroxide and relatively fine sodium chloride crystals, and effecting a substantial separation of the relatively coarse sodium hydroxide crystals from the relatively fine sodium chloride crystals by passing the resultant liquor through a filter of such porosity that substantial quantities of sodium chloride crystals pass there-through while substantial quantities of sodium hydroxide crystals do not.

No. 2,178,987, Process of Making Soap, Patented November 7, 1939 by Benjamin Clayton, Houston, Tex., assignor to Refining, Inc., Reno, Nev. A two-step process for making soap which comprises the steps of: continuously mixing in stream flow saponifiable and saponifying materials and effecting substantially complete saponification while maintaining a temperature below the melting point of the resultant soap when anhydrous, thereafter transferring the resultant mixture to a separate and independent high temperature treating zone and there imparting a temperature substantially above the melting point of the soap when anhydrous, quickly removing a stream of the mixture from the high temperature zone and introducing the same into a vapor separating chamber, continuously removing the vaporized materials and removing the molten anhydrous soap from the vapor separating chamber.

No. 2,178,988, Apparatus for Making Soap, Patented November 7, 1939 by Benjamin Clayton, Houston, Tex., assignor to Refining, Inc., Reno, Nev. In combination: a heater providing an elongated reaction zone with intake and discharge ends; means for continuously delivering to the intake end of the elongated reaction zone a stream containing reactable materials; means for applying heat to the stream moving through said reaction zone to react the materials; a container providing a vapor-separating chamber; a mixing means; means for continuously conducting the reaction products from the discharge end of the elongated reaction zone to the mixing means to form mixed products; means for conducting these mixed products from the mixing means to the vapor-separating chamber; means for continuously withdrawing vapors from the chamber which separate from the non-vaporized material included in the mixed reaction products entering the vapor-separating chamber; means for separately withdrawing the non-vaporized material from the chamber; and means for applying heat to the reaction products at a position between the mixing means and the means for withdrawing the non-vaporized material for facilitating liberation of vapors from the non-vaporized material.

No. 2,179,853, Method of Making Soap Cakes, Patented November 14, 1939 by Ruel A. Jones, Covington, Ky. The method of pressing a buoyant cake of soap containing an air cell from a tubular blank of soap having open ends, the method comprising, confining two relatively opposite side portions and the ends of the blank and pressing the remaining unconfined side portions toward one another at each end only to close the openings and form a sealed air cell in the cake.

No. 2,181,087, Detergent Composition, Patented November 21, 1939 by Coleman R. Caryl and Alphons O. Jaeger, Mount Lebanon, Pa., assignors to American Cyanamid & Chemical Corporation, Bridgeville, Pa. A detergent composition in the form of a neutral powder which is stable, noncaking and readily soluble in water, comprising a spray-dried mixture of the sulfosuccinic ester of an aliphatic alcohol having from 5 to 8 carbon atoms and a water-soluble, nonhygroscopic carrier which is stable at spray-drying temperatures and which exhibits when in a saturated solution a pH value between 6.5 and 8.5.

No. 2,181,217, Parasiticide, Patented November 28, 1939 by William P. ter Horst, Packanack Lake, N. J., assignor, by mesne assignments, to United States Rubber Company, New York, N. Y. As a parasiticide, a preparation containing as an active constituent, a product of reaction of acetonyl acetone with ammonium thiocyanate.

Sweet Pea Perfume for Soaps

A sweet pea perfume for soaps might be made with benzylidine acetone but the action of this material on the skin of operators of soap mills precludes its use, even though the condition may be due to allergy. The following has been used with success and is moderate in cost:

	Parts
Benzaldehyde	4½
Anisaldehyde	1
Iso-eugenol	5
Benzyl acetate	9
Lavender oil	5
Geranium oil	1
Hydroxy citronellal	10
Bergamot oil	2
Terpineol	2
Geraniol, good	1

A color suitable for use with this perfume is made from 2½ ounces of tartraphenine and ¼ ounce of Rhodamine B dissolved in 44 ounces of water. Use 2 ounces of this solution per 28 pounds of soap chips.

Perfumers who have specialized in soap blends have made the balsams suitable for use and to a large extent have done away with the necessity of making tinctures. Thus tolu, Peru, and benzoin can be used in small quantities in almost any blend. The two finest fixatives, however, are guaiacum wood oil and styrax, the odors of which are so delicate that they can be used in any blends. *Manufacturing Perfumer* **4,** 293-4 (1939).

Trend of Soap Progress

(*From Page* 31)

liberated energy, but fails to transfer this energy so that further molecular activation is prevented. For measuring rancidity, probably the Lea test, lately introduced, is one of the best. It measures the peroxide content of oxidized fats. Some of the most effective preservatives so far have an adverse effect on color of soap, and generally it may be said that research in this field has hardly yet begun. If the head of a research organization like that of Lever Bros. says this, there must be something in it, and it is good to think there is still research work to do.

If the chemical engineer is at times prone to indulge in day dreams, they must derive their most roseate hues from the idea of continuous processes as compared with the old batch method. The soapmaker too has sometimes yearned for continuity, but is still working in batches, though possibly the Julius Schaal "Descha-System" in Germany, whereby it is claimed 100 per cent saponification is achieved in 1 to 2 hours, may be a step in the desired direction. At present, under the best British practice, the boiling process altogether takes 6 to 12 days, though the actual saponification of course only occupies a very small part of this. But despite the work of McBain and others who have thrown some light into dark corners of soap boiling and stimulated further efforts towards a quantitative proces, this desired goal is not yet reached in England.* However, tanks to Hartley and co-workers and to Lester Smith, we have hypothesized the soap micelle and some of its ways, and this may lead us along the right paths to reach the goal of quantitative continuity.

Progress has been happier away from the soap pan. That is to say, quite appreciable improvements have ben made, e.g. in the removal of impurities by centrifugal machines and by straining and filtering devices, in improved methods of cooling in bars or slabs instead of great chunks of a ton or more, using cold running water or cold air in various ways, or in very thin films beautifully smoothed on both sides, in mechanical soap drying by replacement of string nets with metal nets and improved design of fans and baffles to control hot air flow which may pass either across or through the soap with use both of forward and return travel of conveyor band, in milling of the partly dried soap ribbon, in the production of fine soap flakes with the latest temperature-controlled chilled cast iron rolls with precision ground surfaces, the flakes having a thinness of only 1/1000 to 1/500th inch, and in the evolution of toilet soaps of remarkable cheapness, quality, perfume retention, and good color.

Perhaps the greatest improvement has been in soap powders. Whereas the miserable powders of former days had merely been placed near to some fatty acids and become contaminated therewith, today we can point to a high fatty acid content, to remarkable detergent efficiency, so that they can be used entirely alone without other adjuncts for household washing, and are altogether suitable for hard waters. Their properties have been enhanced by additions such as various phosphates. One form or another of spraying is the modern method of manufacture, in some cases including chilling to cause rapid crystallization. The density of the powders may vary from 0.1 (6¼ lbs. per cu. ft.) to 0.6 (37½ lbs. per cu. ft.). Powders for both washing and bleaching, and containing perborate, involve problems in regard to stability on which present research is working. In the packaging too, and in other types of automatic machinery, remarkable progress has been made: soap-stamping, 160 tablets per min., soap-wrapping 140, soap cartonning 120-160, weighing and filling flakes 60-90 cartons, and measuring and filling soap powders 120 or more cartons per minute. All this, and much more, are the marks of progress in the soap industry.

*In the U. S., continuous soap manufacture under practical plant conditions is now being carried on. The process is covered by the Clayton Patents, owned by Refining, Inc., Long Island City, N. Y., U. S. Patent No. 1,968,526 and others including reissues, and British Patent No. 458,600, 487,399, and others.—*Editor.*

Sulfonated Oil Analysis

A sulfonated sperm oil was analyzed by five laboratories according to the methods of (1) the American Leather Chemists' Association, (2) the American Society for Testing Materials, and (3) the Sulfonated Oil Manufacturers' Association. The total sulfated fatty matter by the third method agrees with the total active ingredients by the second method. Unsaponifiable matter by the second method is more than double that found by the first method, because the alcohols of sperm oil are sulfonated in part, and are not returned as unsaponified matter unless the sample is thoroughly hydrolyzed before saponification, which is accomplished in the second method but not in the first. This leads to a large difference in neutral fatty matter as determined by these two methods. The pH values found in a 10 per cent emulsion were 0.09 to 0.26 unit higher than in a 5 per cent emulsion. R. E. Porter, et al. *J. Am. Leather Chem. Assoc.* 34, 440-4 (1939).

—— ♦ ——

Detergent Efficiency

The cleaning efficiency of a number of detergent compounds including soap and some sodium alkyl sulfates was determined by actual washing tests of standard soiled wool in a Launderometer. With a washing time of 30 minutes at 50°C. (122°F.) in the presence in each case of 0.25 per cent of soda ash as a builder, 0.75 per cent solutions of the following products showed cleaning action in decreasing order of efficiency:

1. Sodium octadecenyl sulfate.
2. Sodium salt of *beta*- lauramidoethyl sulfuric acid.
3. Sodium cetyl sulfate.
4. Sodium lauryl sulfate, commercial.
5. Sodium salt of cetyl phenolsulfonic acid.
6. Sodium salt of sulfated oleyl alcohol.
7. Sodium salt of branched

chain alkylated benzene sulfonic acid.

8. A fatty amide sulfonate.

9. Olive oil chip soap.

10. Sodium salt of isopropylated *beta*-naphthalene sulfonic acid.

The same order of efficiency held in general for 0.05 and for 0.1 per cent solutions of the detergents. Compounds number 1 and 2 were very close to each other in efficiency, as were compounds number 5 and 6. At 0.1 per cent concentration, the more efficient cleaners, numbers 1 and 2, gave about 50 per cent cleaning as compared with 10 per cent for the same concentration of olive chip soap, number 9.

The different detergents are affected in different ways by various factors such as temperature and the time of cleaning action, so that it is essential to have the right condition in order to get the best results from any one product. Results cannot always be predicted on theoretical grounds so that direct measurement of cleaning action is considered the most satisfactory answer. Frank A. Lucy. *Textile World*, Oct. 1939, 76-8.

—— ♦ ——

Rice Bran Oil

Rice bran from a horizontal cleaning mill and from a vertical cleaning mill had the following average composition respectively: Moisture 10.64, 11.81 per cent, oil 20.38, 15.21 per cent, and ash 10.23, 7.80 per cent. Tests have shown that the increase in free fatty acids in the oil of rice bran is far greater than in the case of the ground castor bean, but if sufficient moisture is added to the castor bean, then the oil in the bean is changed to fatty acids to the extent of 95 per cent as against 23 per cent for rice-bran oil. After storing rice bran for 4 months the fatty acids of the oil increased from 3.94 to 9.36 per cent. The free fatty acids in crude pressed oil increased in a period of 300 days from 8.15 to 13.0 per cent. I. Tei Hidaka. *J. Soc. Chem. Ind., Japan* **42,** Suppl. binding 219-20, 237-9 (1939).

I. G. Synthetic Waxes

Waxy properties can be expected to appear when compounds contain aliphatic carbon chains of sufficient length, the other groups which may be present such as amino, acid and ester, being of importance principally in determining solubility, oil-binding properties, emulsifying power etc. Purified montan wax obtained by extracting brown-coal bitumen, consists mainly of high-molecular aliphatic carboxylic acids. I. G. synthetic waxes are made from this by esterifying or otherwise altering the carboxyl groups. G. M. Aschenbrenner. *Fette und Seifen* **46,** 26-9 (1939).

—— ♦ ——

Wax from Wool Fat

Products colloidally soluble in water are obtained by treating wool fat with alkali metals at temperatures above 100°C. with exclusion of solvent. Thus, wool fat is treated with metallic sodium for 1 hour at 150°C. to give a wax-like product. I. G. Farbenind. A.-G. German Patent No. 674,874.

—— ♦ ——

Soap-Cresol-Water Systems

The viscosity of sodium stearate solutions in the presence of an excess of free fatty acid and cresol was studied. The addition of 1 mol of free fatty acid to 10 mols of sodium stearate has no noticeable effect on the viscosity of the solution in the absence of cresol. The viscosity is about the same regardless of the nature of the excess acid, stearic, palmitic or oleic, and corresponds to the viscosity of a sodium stearate solution whose concentration is equal to the sum of the salt and acid content. The influence of the nature of the acid or the temperature is only noticeable at high concentrations. When cresol is added to the soap solution in the presence of the three acids the viscosity is increased and in a different degree for the three acids, that with excess stearic acid being greatest.

Viscosity passes through a maximum and becomes lowest with an addition of 5 per cent of cresol which corresponds to a maximum degree of dispersion of the colloidal soap-fatty acid mixture. The strongly hydrophobic complex becomes very easily dispersible at this concentration of added cresol. E. Angelescu and V. Ciortan. *Kolloid-Zeitschrift* **89,** 47-54 (1939).

—— ♦ ——

Carbonyl Number

Recent interest in oiticica oil and products made by oxidizing paraffin makes the determination of carbonyl groups increasingly important. With light-colored samples, boil 0.5-2.0 grams of oil gently for 2-3 minutes with 20 cc. of a solution of hydroxylamine prepared by dissolving 40 grams of hydroxylamine hydrochloride in 80 cc. of water, diluting with 800 cc. of alcohol, adding 600 cc. of 0.5 Normal alcoholic potassium hydroxide solution and filtering. Titrate with 0.5 Normal hydrochloric acid with methyl orange indicator and calculate the carbonyl number as 28.1 (cc. of 0.5 Normal hydrochloric acid for blank—cc. of 0.5 Normal hydrochloric acid used with sample) weight of sample. With dark-colored samples, add 10 cc. of 0.5 Normal hydrochloric acid after boiling with the hydroxylamine solution, remove the colored fatty material by extraction with ether, wash the ether solution with water and titrate the combined aqueous solutions with 0.5 Normal potassium hydroxide solution. W. Leithe. *Fette und Seifen* 45, 615-16. through Chem. Abs.

—— ♦ ——

Sassafras Substitutes

Sassafras Artificial increased in price during the summer and has since become relatively scarce. Three different odors which are recommended as substitutes for sassafras have bouquet odor types more pleasing and tenacious than Sassafras Artificial. One grade in particular, the Savarome No. 3, sells at a price more than 50 per cent lower than Sassafras. These Savaromes are exceptionally good in character. While they were originally intended for use in low priced soaps, they have found wide use as Sassafras substitutes. *The Givaudanian,* October, 1939.

Sanitary Products SECTION

A Section of "SOAP" dealing with

Insecticides • Disinfectants • Moth Products
Floor Products • Polishes • Chemical Specialties


A CLEAN

SWEEP....

because when they're down . . . *they're OUT!*

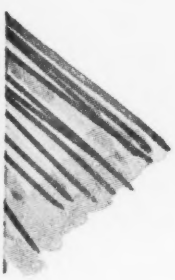
THAT'S THE WAY pyrethrum acts . . . a knock DOWN is a knock OUT. And that's why you can finish the job with a broom after spraying flies with a *pure* pyrethrum base insecticide.

Some synthetics knock 'em down, too, but there's a difference! Any one who operates the Peet-Grady method knows that flies knocked down at the end of ten minutes by some synthetics are almost impossible to sweep up.

"Knock-down" means everything to the housewife. The housewife doesn't know about the kill at the end of 24 hours, or any other feature of the Peet-Grady method. If she sprays flies, then sweeps, and sees the flies zoom away from the broom—she'll buy no more of that brand of insecticide.

If you want to be sure your finished product will knock flies down and OUT, ready for the broom and dustpan . . . use Pyrocide 20. Pyrocide 20 contains neither synthetics nor "false" pyrethrins. It is the purest form of pyrethrins commercially available. Pyrocide 20 is guaranteed to contain 2.5% pyrethrins by weight, 2.0 grams per 100 cc. The pyrethrin content is established by three analyses, the last taking place just before shipment to you.

McLAUGHLIN GORMLEY KING COMPANY, *Minneapolis, Minn.*



PYROCIDE 20

THE PUREST FORM OF PYRETHRINS COMMERCIALLY AVAILABLE

PARA-DICHLOROBENZENE

MODEL 1940

Grade 1	2	3	5	6	7	8	9	10	11

Streamline your next year's para-dichlorobenzene sales with the crystal size that is exactly suited to *your* type of packaging!

There are 10 good reasons for modernizing your 1940 line. These 10 reasons are SOLVAY'S 10 GRADE SIZES of para-dichlorobenzene.

These reasons alone are sufficient excuse for placing your orders with Solvay this year . . . but even that is not all . . .

Solvay Para-dichlorobenzene has a reputation for clearness of crystal . . . that also means a better looking package.

And SOLVAY itself has a reputation for prompt efficient service. This means getting organized early . . . getting shipments started early! Fill in the coupon now for prices and other information on Solvay Para-dichlorobenzene.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK, N. Y.

BRANCH SALES OFFICES:

Boston · Charlotte · Chicago · Cincinnati · Cleveland · Detroit · Indianapolis
New Orleans · New York · Philadelphia · Pittsburgh · St. Louis · Syracuse

YOU CHECK THE GRADE . . . WE'LL DO THE REST

We will send you a sample of the grade you check off . . . send you complete information on Solvay Para-dichlorobenzene . . . or if you are uncertain of your requirements, our technical staff is ready to help you select the most efficient grades for your particular purposes. Make use of Solvay service! Fill in the coupon now!

SOLVAY
TRADE MARK REG. U. S. PAT. OFF.
PARA-DICHLOROBENZENE

1	2	3	5	6	7	8	9	10	11

Solvay Sales Corporation, 40 Rector Street, New York, N. Y.

Gentlemen: Please send me a sample of the grade of Solvay Para-dichlorobenzene I have checked off, along with complete information.

*Name*_____

*Company*_____

*Address*_____

*City*_____ *State*_____ AJ-1

PYRETHRUM Is Still King

Not Alone Against Houseflies . . .

but Roaches, Bed Bugs, Ants, Fabric Moths, Silverfish

HOUSEFLIES are relatively easy to kill but how about tougher insects—fabric moths, ants, roaches, bed bugs and silverfish? A general insecticide must control a broad variety of insects. Positively known and proven (through over 200 years of use, and thorough scientific tests) is the ability of pyrethrum to conquer them all.

and PYREFUME Still Reigns as "The Perfected Pyrethrum Concentrate"

Laboratory men, expert chemists, pharmacognosists, bio-assayists and entomologists scientifically see to it that every batch of Pyrefume is physiologically tested for high "knock-down and kill" potency . . . rigidly assayed after extraction for pyrethrins content . . . uniquely stable due to a special Penick process . . . singularly free from odor so that less perfume is required . . . unusually stainless. Pyrefume costs less due to Penick economies.

PYREFUME IS STANDARDIZED

•

GUARANTEED IN PYRETHRINS CONTENT

S. B. PENICK & COMPANY

132 Nassau St., New York, N. Y. **1228 W. Kinzie St., Chicago, Ill.**

THE WORLD'S LARGEST BOTANICAL DRUG HOUSE

1940 Official Test Insecticide

SUPPLIES of 1940 Official Test Insecticide will not be available until March 1, 1940, or shortly thereafter. For the evaluation of commercial insect sprays by the official N.A.I.D.M. Method, supplies of 1939 O.T.I. may be used up to April 1, 1940. It is contemplated that the 1940 O.T.I. will approximate as closely as possible the 1939 O.T.I. so that there will be no marked variation in results between the two materials.

Orders for 1940 O.T.I., where delivery is desired as soon as the material is available, should be sent to the Association office prior to March 1. Prices for 1940 O.T.I. will be the same as for 1939. Further information may be secured from the Association office.

▼

National Association of Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street New York

OFFICERS

President.....W. J. ZICK, Stanco, Inc., New York
First Vice-President.....JOHN CURLETT, McCormick & Co., Baltimore
Second Vice-President.....H. A. NELSON, Chemical Supply Co., Cleveland
Treasurer.....JOHN POWELL, John Powell & Co., New York
Secretary.....IRA P. MACNAIR, MacNair-Dorland Co., N. Y.

BOARD OF GOVERNORS

GORDON M. BAIRD
Baird & McGuire, Inc., Holbrook, Mass.
J. L. BRENN....Huntington Labs., Inc., Huntington, Ind.
N. J. GOTHARD...Sinclair Refining Co., E. Chicago, Ind.
H. W. HAMILTON.....White Tar Co., Kearny, N. J.
DR. E. G. KLARMANN
Lehn & Fink, Inc., Bloomfield, N. J.
WALLACE THOMAS.....Gulf Refining Co., Pittsburgh
DR. E. G. THOMSSEN..J. R. Watkins Co., Winona, Minn.
CLARENCE WEIRICH..C. B. Dolge Co., Westport, Conn.
R. H. YOUNG.... Davies-Young Soap Co., Dayton, O.

The

"SEND US A GALLON"

policy ★

is still your best assurance of proper, scientifically balanced insecticide perfuming.

With a sample of your unperfumed insecticide to work with we can prescribe a perfume whose volatility is matched with that of the base. Thus you are assured of complete odor coverage when you need it and complete dissipation of perfume when the base odor is gone.

★ Send us a gallon of your unperfumed insecticide and we will submit perfume samples already incorporated in your product

VAN AMERINGEN-HAEBLER, INC.
315 FOURTH AVE., NEW YORK CITY

Grown from Good Seed

Manufactured goods must be grown from good seed too—carefully selected raw materials—if they are to be rated in the prize winning class. For many years Niagara Alkali Company has helped customers put and keep their products in the top quality brackets—with a consistently excellent supply of Caustic Soda, Caustic Potash and Carbonate of Potash. If you use these materials think of Niagara quality as "good seed" for raising prize winning products!

Niagara ALKALI COMPANY
60 EAST 42ND STREET, NEW YORK, N. Y.

Affiliated with Electro Bleaching Gas Company, Pioneer Manufacturer of Liquid Chlorine

CAUSTIC SODA
CARBONATE OF POTASH
CAUSTIC POTASH

Sanitary Products

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

SOME floor wax manufacturers, judging by their remarks on the subject, are still a trifle hot under the collar about the carnauba wax situation. They feel that the producers in Brazil have been doing everything they can to kill the goose that lays the golden eggs, and that some importers by buying at steadily mounting prices back a month or so ago, played right into the hands of the shippers. In a few instances, we know of floor wax manufacturers who in between their mutterings against the Brazilian shippers, found time to sell a bag or two of excess carnauba at a handsome profit,—a better profit, in fact, than they could make by turning the material into finished floor wax and selling it in competition. All of which makes us wonder why when carnauaba prices rose so sharply, floor wax prices rose comparatively little. Maybe some manufacturers have found a way to add rubber to their carnauba to make it stretch.

IN THE insecticide industry, there are two schools of thought as far as sales are concerned. One holds that household insecticides sell in proportion to the need for them and have little or no bearing on whether general economic conditions are good or bad. Others maintain that insecticide sales are directly affected by economic conditions and that with all other factors being equal, they sell better in good times. Probably, there is considerable of truth in both points of view,—and also some things which are false.

The chances are very much in favor of 1940 being a good year economically, with the rank and file of the population having more money to spend. Granting that the rate of household insect infestation will be about the same as heretofore, maybe it might be a good year during which to turn on a slight increase in sales pressure, including more advertising to consumers. If the public has the money to buy, at least we know that they can buy when the need arises, which is not always the case when economic conditions are bad. Maybe 1940 is that year we have been looking for since 1928!

WITH one accord, the daily press of the nation appears to have awakened to the growing list of barriers being erected by the forty-eight states against the free flow of interstate commerce. Why it has taken the newspapers five years to wake up to this situation is difficult to understand, but nevertheless it is a fact.

Most of the states are today hard up and need the money which comes from these various and sundry fees and taxes. They cannot afford to permit the current campaign in the newspapers to shame them into changing their courses. And if there is anything left resembling state pride, it has long since been submerged beneath the pressing need for more, and more, and more money, as legislatures unblushingly and unhesitatingly shake down out-of-state manufacturers. No, gentle reader, we fear that too many of our state legislators have developed a callousness, born of the need for funds, too tough to be pierced by a belated newspaper publicity campaign.

1940 Officers

W. J. ZICK, President
Stanco, Incorporated

JOHN CURLETT, 1st Vice-president
McCormick & Co.

H. A. NELSON, 2nd Vice-president
Chemical Supply Co.

JOHN POWELL, Treasurer
John Powell & Co.

OFFICERS AND GOVERNORS

1940

NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MFRS.

President
W. J. ZICK
Stanco, Inc.

1st Vice-president
JOHN N. CURLETT
McCormick & Co.

2nd Vice-president
H. A. NELSON
Chemical Supply Co.

Treasurer
JOHN POWELL
John Powell & Co.

Secretary
IRA P. MAC NAIR
Mac Nair-Dorland Co.

Board of Governors

GORDON N. BAIRD Baird & McGuire, Inc.	N. J. GOTHARD Sinclair Refining Co.	H. W. HAMILTON White Tar Co.
J. L. BRENN Huntington Laboratories	DR. E. L. KLARMANN Lehn & Fink, Inc.	WALLACE THOMAS Gulf Refining Co.
Dr. E. G. THOMSSEN J. R. Watkins Co.	C. L. WEIRICH C. B. Dolge Co.	R. H. YOUNG Davies-Young Soap Co.

INSECTICIDE-DISINFECTANT MEETING

Over 250 attend Washington sessions—Hear reports on Moribund Flies, Petroleum Cresylic Disinfectants, Raw Material Outlook—W. J. Zick of Stanco, Inc., 1940 President—To meet at Lake Wawasee, Ind. in June, 1940.

HIGHLIGHTS of the Silver Anniversary Meeting of the National Association of Insecticide and Disinfectant Manufacturers held at The Mayflower, Washington, D. C., Dec. 4 and 5, were discussions and papers on petroleum-derived phenolic materials, counting of moribund flies in connection with the Peet-Grady test, and a symposium on raw material markets as affected by the war. More than 250 members and guests came from all parts of the country to hear talks and discussions on scientific topics, legislative problems, test methods, and a wide number of other subjects. The consensus of those present favored deferring action on counting moribund flies in the Peet-Grady test. A special committee was appointed to draft a new specification for phenolic materials. The board of governors recommended that the 26th Annual Summer Meeting be held at Lake Wawasee, Ind., June 16-19, 1940, and this was unanimously approved by the association. Lake Wawasee was the site of the 24th Annual Summer Meeting in 1938.

A nominating committee consisting of H. W. Hamilton, White Tar Co.; W. B. Eddy, Rochester Germicide Co.; Dr. Robert C. White, Robert C. White Co.; C. P. McCormick, McCormick & Co., and Dr. George Reddish, Lambert Pharmacal Co., presented a slate of officers which was elected for the coming year headed by W. J. Zick of Stanco, Inc., New York, as president, succeeding J. L. Brenn, Huntington Laboratories, who has held office for the past two years, John N. Curlett of McCormick & Co., was named first vice-president and Henry A. Nelson, Chemical Supply Co., second vice-president. John Powell of John Powell & Co. was re-elected treasurer and Ira P. Mac Nair, Mac Nair-Dorland Co., secretary of the association.

Members of the board of governors elected for three years include Dr. E. G. Klarmann, Lehn & Fink Products Co., J. L. Brenn, retiring president of the association, and Russell H. Young, Davies-Young Soap Co., who was re-elected.

One of the most important topics at the meeting was a discussion on "Shall Petroleum Derived Phenolic Materials Be Made Part of Coal Tar and Cresylic Disinfectants Under Specifications U. S. Standards No. CS70-38 and CS71-38?" Serving as an introduction to this topic were three papers, "Manufacture and Properties of Cresylic Acids from Petroleum," presented by M. L. Griffin of Shell Development Co.; "Alkyl-Phenolic Disinfectants from Petroleum Sources and the Commercial Standards" by Dr. E. G. Klarmann, and "Procedure in Effecting Changes in Commercial Standards" presented by F. W. Reynolds, division of Testing Standards, U. S. Department of Commerce. Mr. Griffin, in his paper, told of the manufacture and properties of cresylic acids derived from petroleum and compared them with the cresylic acids derived from coal tar. Their similarity, he contended, warrants the use of the same specifications for both.

Dr. Klarmann, who is chairman of the Association's disinfectant scientific committee, continued the report on alkyl-phenolic disinfectants from petroleum sources and discussed the problems which might arise from including these under the same specifications as those for disinfectants derived from coal tar. Explaining the procedure of revision, Mr. Reynolds said that any interested party may submit a proposed revision to a standing committee and if producers equalling 65 per cent of the production volume of the particular product or products want that revision, it is adopted, unless, of course, there is some valid reason. The standing committee is composed of producers and users.

In the discussion immediately following the presentation of these papers several conclusions were reached, i. e., that as far as chemical properties are concerned, coal tar derivatives and petroleum derivatives may be reasonably assumed to be the same. But, although this may be true, similarity in practice has not yet been established and some expressed the thought that more practical tests should be made before considering revision. The difficulty here, however, lies in the fact that acceptance of

Board of Governors, N. A. I. D. M.

R. H. YOUNG
Davies-Young Soap Co.

DR. E. L. KLARMANN
Lehn & Fink, Inc.

J. L. BRENN
Huntington Laboratories

H. W. HAMILTON
White Tar Co.

N. J. GOTHARD
Sinclair Refining Co.

CLARENCE WEIRICH
C. B. Dolge Co.

WALLACE THOMAS
Gulf Refining Co.

DR. E. G. THOMSSEN
J. R. Watkins Co.

GORDON N. BAIRD
Baird & McGuire, Inc.

petroleum derivatives by disinfectant users will be hard to obtain unless they are first included in the specifications.

Dr. Klarmann entered the discussion at this point, stating that the petroleum industry should be thanked

Melvin Fuld of Fuld Bros. and Dr. Alvin J. Cox, California insecticide enforcement chief.

for placing new materials in the hands of the disinfectant industry. Rather than establish barriers to the use of petroleum derived disinfectants, he said, the Association should encourage their use by educating the consumer. He then made a recommendation that a special committee be appointed for drafting a new specification for both coal tar and petroleum derived disinfectants, this specification to be submitted to the Association within 90 days. The committee was appointed composed of Dr. Klarmann as chairman, Dr. George Reddish, Lambert Pharmacal Co., W. B. Eddy, Rochester Germicide Co., Jack C. Varley, Baird & McGuire, Inc., J. H. Carpenter, Koppers Co., M. L. Griffin, Shell Development Co., and Leon W. Miller, The Barrett Co.

ANOTHER subject which occupied an important part in the two day session was the discussion on counting moribund flies in the official Peet-Grady test. Prior to the convention, the board of governors heard a report on the subject, submitted by the insecticide scientific committee of which Dr. Alfred Weed is chairman. The board deferred action, as there was a wide variance of opinion by the committee on whether moribund flies should be counted in the test or not. At the open meeting of the Association, it was agreed that until a more unanimous opinion among the commitee was obtained definite action should be deferred.

In connection with this subject, four reports were read prior to the discussion. Dr. Alfred Weed, John Powell & Co., read a paper entitled "Shall Moribund Flies Be Counted As Dead in the Peet-Grady Test?" and was followed by Dr. H. G. Whitmire, Whitmire Research Co., who presented a paper "The Enumeration of the Moribund Fly in the Peet-Grady Test." L. D. Benedict, Midway Chemical Co., spoke on the "Necessity of Enumerating Moribund Flies in the Peet-Grady Test" and Dr. W. A. Simanton, Gulf Research & Development Co., spoke on "Uncertainties in Enumerating Moribund Flies in the Peet-Grady Test."

A graphic presentation of the outlook in the insecticide and disin-

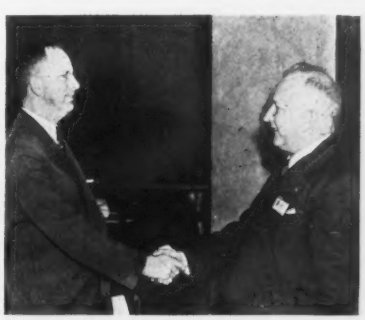
William Haude of John Powell & Co. and Dr. C. C. McDonnell, Dept. of Agriculture, chief U. S. insecticide law enforcement officer.

fectant raw material markets was a highlight of the Tuesday afternoon session. The symposium on "Effect of War on Raw Materials Markets" was led by C. C. Concannon, chief, Chemical Division, Bureau of Foreign and Domestic Commerce. Mr. Concannon compared the raw materials market at the time of the last world war with the present, pointing out that where in 1914, the United States was seriously affected by a shortage of necessary raw materials, today this country is in a much better situation. In fact, he said, the insecticide and disinfectant industry should consider itself very fortunate as it is practically self-sufficient so far as raw materials are concerned.

Following Mr. Concannon's address, papers were read on the market situation in pyrethrum, rotenone products, cresylic acids, chinawood oil, potash and coconut oil. According to S. W. Jacobs, Niagara Alkali Co., American consumers of caustic potash are in a safer position today than ever before in their history, and foreign wars cannot disturb this position which is based on an industry completely American. Supplies are adequate under normal conditions and can be increased in time. Prices have shown no tendency to get out of bounds and the quality of the product is unsurpassed. Consumers need have no fear of a shortage.

Lester W. Jones, McCormick & Co., discussed the pyrethrum market, predicting that for the present pyrethrum prices will probably remain at their high level. In time, he said, readjustments will have to be made and prices will decline. Lower future prices are indicated, he said, because of the increasing importance of Kenya flowers and Brazilian flowers which are now becoming a factor in the industry. In concluding his discussion, Mr. Jones expressed the hope that Japanese flowers would, in time, have to be sold on a pyrethrin content basis, the same as the Brazilian and Kenya flowers are now being sold.

Harold Noble, S. B. Penick & Co., covered the subject of rotenone products, reporting that in the trying times of the past three months, pro-



Ralph Cowan of Standard Oil of Ohio, and Adolph Breuer of Breuer Electric.

ducers, importers, millers and consumers seem to have proceeded with prudence, caution and judgment, so that there has been a minimum of disturbance in the flow of supplies and in the price structure. As for the future, Mr. Noble, stated that adequate supplies are available for the year 1940 without any appreciable rise of price in prospect.

Domestic consumers of tar acids and tar acid oils should expect to be able to satisfy their normal requirements on a reasonable price basis, stated J. H. Carpenter, Koppers Co. Many consumers may not be able to get the exact grades heretofore imported, but if the manufacturers can find outlets for all types of tar acids in the proportions in which they occur naturally after extraction from the tar, there is reason to expect further increases in manufacturing capacity if consumption continues at its present rate or increases further.

Looking at the chinawood oil situation from the market angle, there are two views which must be kept in mind, the short range view and the long range view, said J. H. Lawson, Federal Varnish Co., in his part of the raw materials market symposium. The long range view, he continued, is undoubtedly full of bearish possibilities, while the short range view is not too encouraging. It is unfortunate, Mr. Lawson said, that even in full recognition of all the factors influencing the price of chinawood oil, the picture must remain obscure even to the best posted men in the trade on account of the many uncertainties in China, the future of which cannot be safely predicted.

The effect of war on coconut oil markets is dependent upon two factors, stated John B. Gordon, Bureau of Raw Materials for American Vegetable Oils and Fats Industries, in closing the raw material market symposium. (1) How long will the European war last? A war of short duration, only six months or so, would have little effect upon the copra and coconut oil market. On the other hand, a war of long duration, two or more years, would result in much higher oil and fat prices, inclusive of coconut oil. The second factor which must be evaluated before making any forecast in regard to the future of the coconut oil market, is the effect the European war will have on the general commodity level. There is no reason to expect that coconut oil will move independently of general commodity prices, said Mr. Gordon, and not until there is a general upward surge in the prices of all commodities need the price of coconut oil be expected to advance greatly.

A. L. van Ameringen of van Ameringen-Haebler, Inc.; John Powell, reelected treasurer, and Henry Nelson, new second vice-president.

AN explanation of the California economic poisons labeling law, which some think very rigid, was given by Dr. Alvin J. Cox, Chief, Division of Chemistry, California Department of Agriculture, in an address entitled "The California Labeling Situation." Dr. Cox gave numerous examples of broad and fictitious claims made by some manufacturers on their labels. The persistence of some manufacturers in making such claims, he said, makes it necessary for the state to enforce more rigidly its economic poisons law. The question was raised from the floor as to whether Dr. Cox himself made the ruling which made a label either legal or illegal, some thinking, if this were the case, that the State of California placed too much responsibility on one man. Dr. Cox answered, however, that all his rulings were predetermined by consultations with the state agriculture department, the state university, and other experts.

Another report given by a government official was that by J. J. T. Graham, Food and Drug Administration, and Referee on Insecticides and Fungicides, Association of Official Agricultural Chemists. His paper was entitled "Official Methods for the Determination of Pyrethrins and Rotenone," in which he discussed the various methods of procedure and the advantages and disadvantages of each. The Wilcoxon-Holaday mercury reduction method is probably the most accurate, yet proposed for the determination of Pyrethrin I in pyrethrin powders. Mr. Graham stated, while the Seil method is probably the best that has been proposed thus far for the determination of Pyrethrin II. For pyrethrum extracts in mineral oil the mercury reduction method seems to give satisfactory determination of Pyrethrin I in such products. The Jones-Graham method has been adopted as official for the determination of rotenone in derris and cube powder. At the conclusion of Mr. Graham's paper, the Association was informed by Dr. C. C. McDonnell that sometime in the near future the government may enforce the listing of inert ingredients on the labels of pyrethrum powder packages.

At the close of the Tuesday morning session, Dr. F. L. Campbell, associate professor of entomology, Ohio State University, gave a talk and demonstration based on a study of hand insecticide sprayers being carried on at the University. The talk consisted of a progress report

(*Turn to Page* 123)

New Golf Cup

A new golf trophy for insecticide and disinfectant manufacturers will be placed in competition at the June, 1940, meeting of the N.A.I.D.M. at Lake Wawasee, Indiana. Competition for the new mug, to be donated by former president J. L. Brenn and to be known as the Brenn Cup, will be restricted to members over 6 feet 2 inches tall and under 5 feet 2 inches. The competition will be in charge of Dr. E. G. Thomssen of the J. R. Watkins Co. Further details will be published later.

A Study of Performance of HAND INSECTICIDE SPRAYERS

By Robert W. Hursh*

Ohio State University

THE design of inexpensive hand sprayers for the application of oil-base insecticides has been largely empirical, the cost of manufacturing sprayers delivering a reasonable quantity of atomized oil without undue fatigue being the determining factor. While the most efficient designs for certain purposes may already have been found by trial and error, their existence cannot be demonstrated without quantitative study of mechanical and insecticidal performance of sprayers now on the market. It is more likely, however, that the most efficient designs are not yet known. Quantitative investigations on performance of an experimental sprayer having adjustable parts or of a series of different types of existing commercial sprayers would be expected to reveal principles of performance that could be applied to intelligent design. This was the idea behind the present investigation.

It must be made clear at the outset that this investigation has not reached its ultimate objective; i.e., to design or choose the most efficient sprayer for a given purpose. It has not even been possible in the time available to study all the factors influencing or contributing to perform-

*A project sponsored by Standard Container, Inc., Bloomfield, N. J. and set up in the Engineering Experiment Station of the Ohio State University under the Research Foundation of this University; S. R. Beitler, adviser, F. L. Campbell supervisor. Paper presented by Dr. Campbell at the 25th annual meeting, National Association of Insecticide and Disinfectant Manufacturers, Washington, D. C., December 5, 1939.

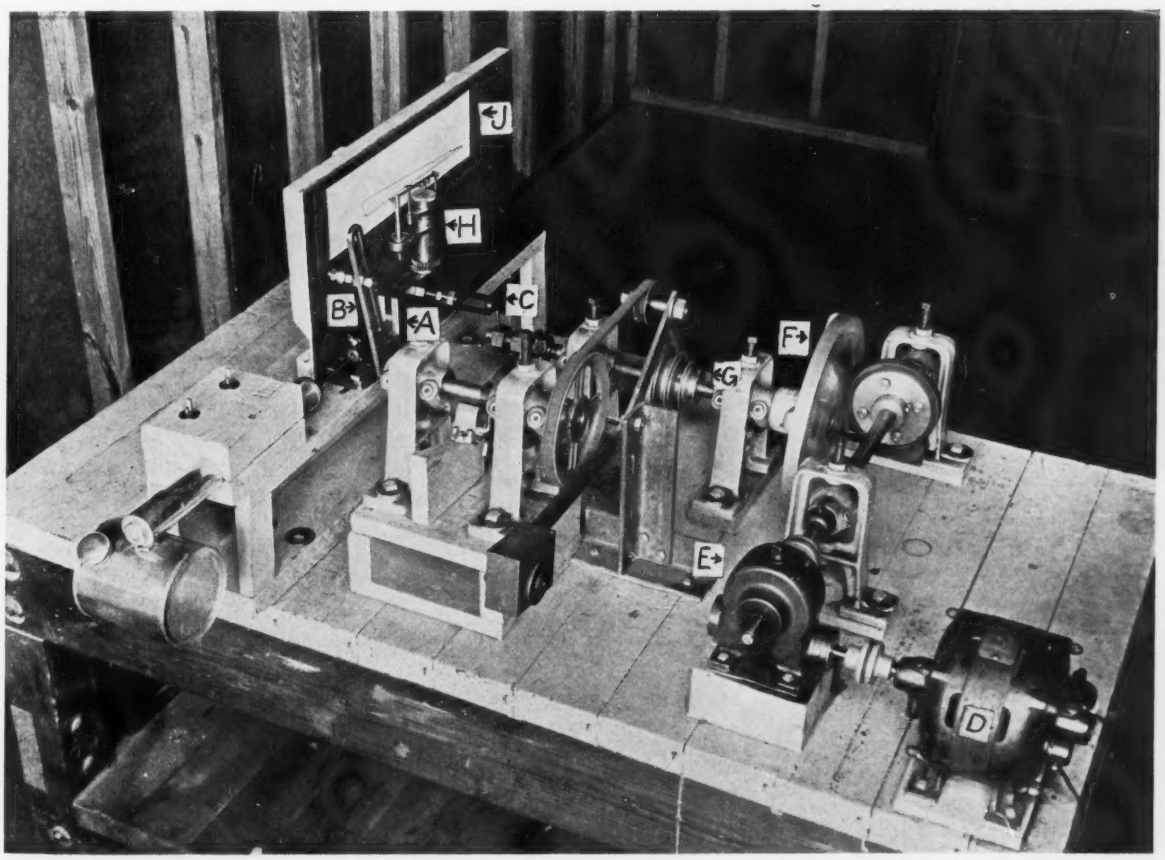


Fig. 1. Machine for operating hand sprayers.

ance and therefore it is impossible to draw any conclusions on the relation between these factors and design. It is believed, however, that progress has been made along the road that must be followed to reach the objective and that the presentation of some

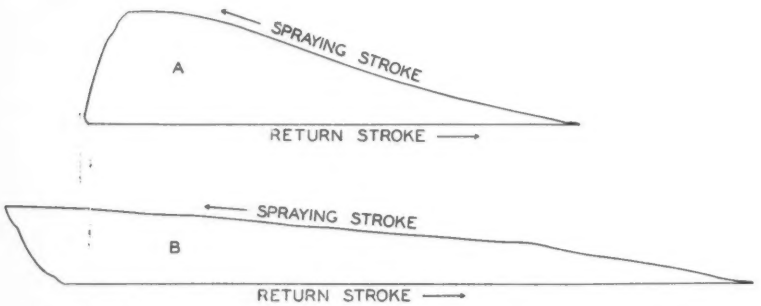


Fig. 2. Dynamometer diagrams showing work done per stroke: A, by intermittent sprayer; B, by continuous sprayer.

results of the present incomplete investigation may help to stimulate further research on hand sprayers.

If cost may be disregarded for the moment, it may be said that the most efficient hand sprayer for a given purpose is one that controls the insects with the least expenditure of time and energy. Among factors directly influencing control we have to consider distribution of drop size and length and spread of the spray cone. The factors indirectly concerned with control and directly concerned with expenditure of time and energy needed to attain control are quantity of oil delivered per stroke and work done per stroke when the sprayer is operated at a given rate.

Spraying Machine

AT THE beginning of this investigation it was decided that sprayers would have to be operated mechanically in order to measure precisely the factors just mentioned. Accordingly a study was first made of stroke motion characteristic of hand operation. It was then found that essentially the same motion could be imparted mechanically to the piston rods of the sprayers by a slider-crank mechanism in which the length of the connecting rod was equal to the diameter of the crank circle. A photograph of the machine embodying this mechanical motion is shown in Figure 1. A sprayer is clamped in place on the left. Its piston rod is connected to the cross-head (A) to which is imparted a reciprocating motion on the slide by the circular motion of the crank (B) driving the connecting rod (C). The dimensions of the crank circle and connecting rod are adjustable to suit the length of stroke of the sprayer being studied. The rest of the machinery is concerned merely with the transmission of power from the motor (D) and with speed regulation. The 1/6 hp. motor ran at 1,750 r.p.m. This speed was reduced to 125 r.p.m. by a 14 to 1 worm gear speed reducer (E) which transmitted the power to a crown friction drive (F). This drive served as a clutch and also to make speed adjustments. The friction drive was connected with the crank (B) through cone pulleys (G), which likewise served for speed adjustment.

The machine just described permits any hand sprayer to be operated at any reasonable constant speed over any desired period of time. It thus fixes the conditions under which any of the above mentioned factors may be studied.

Work Done per Stroke

OF ALL the factors involved in performance of hand sprayers, ease of operation is most important, for if a sprayer quickly fatigues the user, the results desired are not likely to be attained. It was highly desirable, therefore, to measure ease of operation in terms of work done per stroke at a constant speed. This problem was solved by use of a dynamometer shown in Figure 1 at (H). It was mounted on the cross-head in such a way that the force applied to the sprayer piston rod on the spraying stroke was transmitted to the spring in the dynamometer, raising it a distance proportional to the force. The small movement of the spring is magnified by the recording mechanism shown at the top of the dynamometer and the spring of the instrument is so calibrated that the rise of the pencil above the base line on the record paper (J) measures the force ap

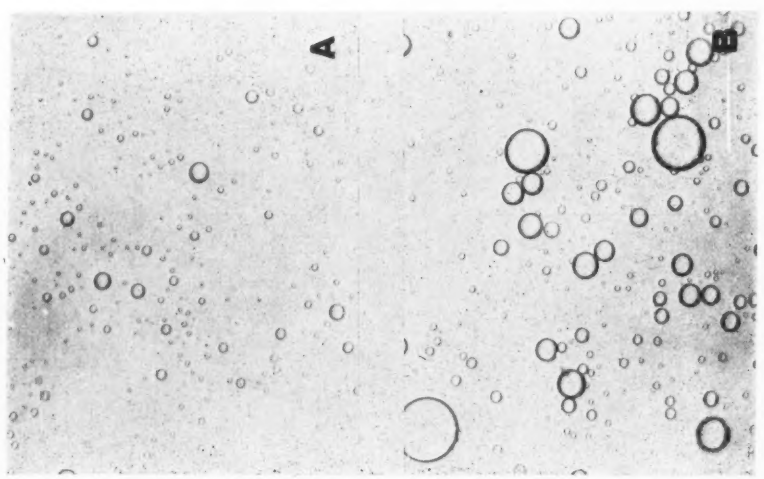


Fig. 3. Samples of drops in spray from: A, 1 pt. intermittent sprayer; B, 1 qt. continuous sprayer.

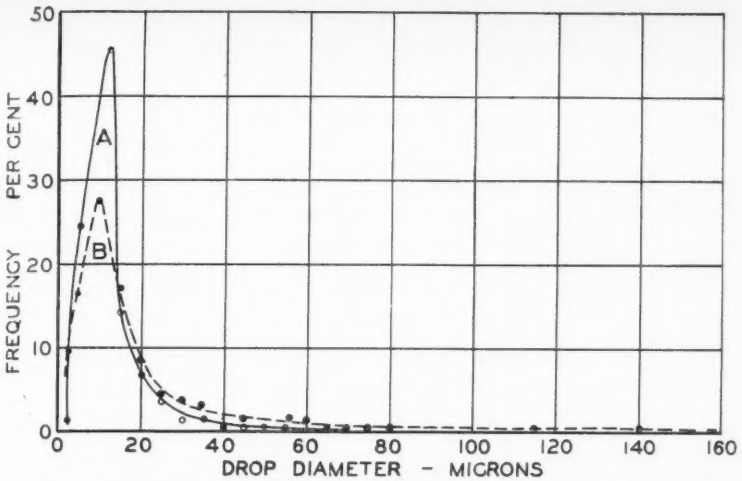


Fig. 4. Size distribution of drops in samples shown in Fig. 3, A and B.

plied. As the dynamometer is attached to the cross-head (A), it moves with the piston rod and when the recording pencil is brought in contact with the record paper (J) diagrams are obtained such as are shown in Figure 2, A & B. The curve above the base line represents the force applied throughout the spraying stroke; the base line represents the return stroke for which little force is necessary. As work done equals force times distance, the work performed throughout the stroke can be measured by determining with a planimeter the area enclosed by the diagram.

For the measurement of work done per stroke, as well as other factors, two general types of sprayers were used: intermittent and continuous. The former sprays only on the spraying stroke, while the latter sprays also on the return stroke by release of air from an air chamber in the sprayer in which pressure was built up during the spraying stroke. Dynamometer diagrams for these two types of sprayers are different in appearance as shown in Figure 2, A and B. The "intermittent" diagram (A) shows a rise on the spraying stroke that reaches a maximum before the end of the stroke and falls rapidly to the end of the stroke as the piston is coming to rest before reversing direction. The "continuous" diagram (B) shows a rise to the end of the spraying stroke followed by a rapid fall as the stroke is reversed.

By obtaining many diagrams from a series of sprayers of the same type and model, one will obtain a diagram that can be considered characteristic of good performance for that model. Diagrams that deviate from this standard serve not only to detect faulty performance, but in some cases to point out the nature of the fault.

Output of Oil

IT IS easy to determine the quantity of oil delivered by a sprayer operating at a constant speed. It is necessary only to weigh the sprayer, the reservoir of which has been filled with oil up to a certain proportion of its capacity, run the sprayer through a given number of strokes, and weigh again; difference in weight being the quantity of oil delivered.

As might be expected, quantity of oil delivered per stroke at constant speed depends not only on the size and type of sprayer, but on the quantity of oil in the reservoir relative to its capacity. Tests of all sprayers were made both with the reservoir three-quarters full and one-quarter full. Owing to the lower head of oil, the output was always less at one-quarter capacity than at three-quarters. To give an idea of the difference it may be said that for all types and sizes of sprayers the one-quarter output averaged 81 per cent of the three-quarters output.

Having described methods for determining work done and oil output, we are in a position to discuss the tests made on these factors and results obtained under a constant set of conditions (temperature was not controlled).

An adjustable experimental sprayer was not used in this work. All tests were made on various types and sizes of sprayers taken at random from the production line of the sponsor. As most of these sprayers were intended for the application of light oils of the type commonly used for household sprays, a single sample of such an oil was used for all tests. The

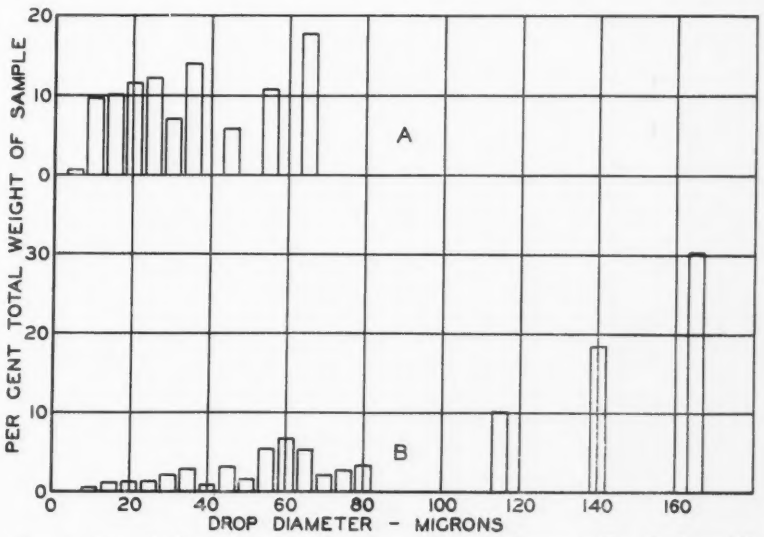


Fig. 5. Weight distribution of drops in samples shown in Fig. 3, A and B.

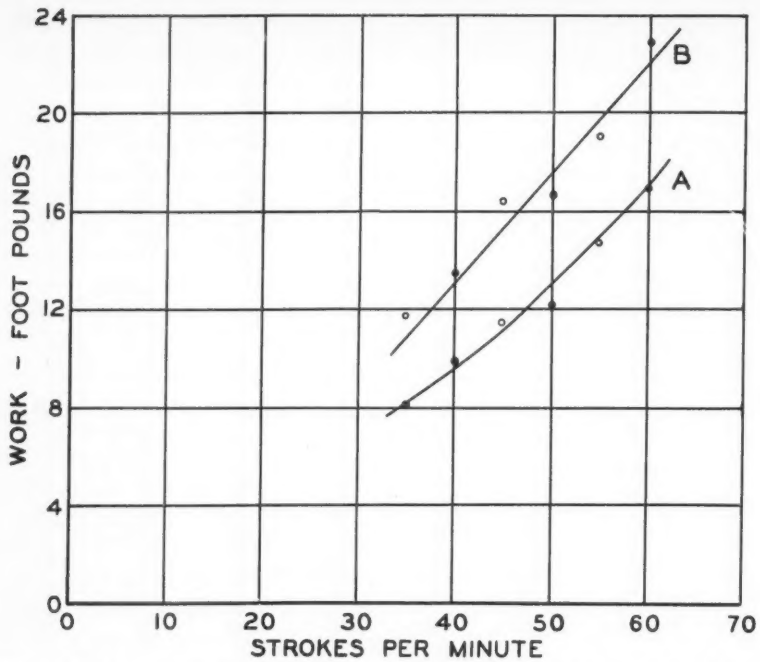


Fig. 6. Relation between speed of operation and work done per stroke on sprayers A and B of Figure 3.

characteristics of this oil are given in Table 4 of a recent publication.[1] It is realized, of course, that performance will depend on viscosity of the oil, but this factor was not studied in the present work.

As 50 strokes per minute is a normal operating speed for hand sprayers, all tests described in this section, with one exception, were run at this speed.

Tests were made of 123 continuous and 71 intermittent sprayers distributed by size shown in Table 1. As there is some variation in the performance of specimens of any model, the average results given in Table 1 are not the best results obtained, but serve to show the relative performance of different models. Oil output is given only for reservoirs three-quarters full.

The last and most important column of Table 1 requires some explanation. Other factors being equal (which they are not), the most desirable sprayer would be one that would deliver the most oil with the least effort. This combined factor was calculated simply by dividing oil output per stroke by work done per stroke to give milligrams of oil delivered per foot-pound of work done. The larger this figure, called the "output factor," the more efficient the sprayer from this limited point of view.

The results given in Table 1 show that both intermittent and continuous sprayers become harder to operate as the size of the cylinder is increased, or, in other words, the smaller the sprayer the greater the ease of operation. On the other hand, generally speaking, the oil output per stroke tends to increase with size of sprayer. Therefore the range of output factor is relatively small. If a given quantity of spray is required to do a certain job, it would take a physiologist or psychologist to determine whether it is preferable to operate a small sprayer over a longer period of time or a larger sprayer over a shorter period. One suspects that sprayers of series No. 2 and 7 would be the most desirable in their respective types because the output factor is high, with low work and medium oil output. However, it has already been pointed out that a sprayer cannot be chosen intelligently on the basis of these data alone. For certain purposes it may be desirable to deliver large quantities of oil rapidly in order to give insects a heavy dose of insecticide; for other purposes it may be preferable to fog a space more slowly.

In this connection it is desirable to learn something about the distribution of drop size in the spray and the dimensions of the spray cone. The latter was not studied in the

(*Turn to Page* 119)

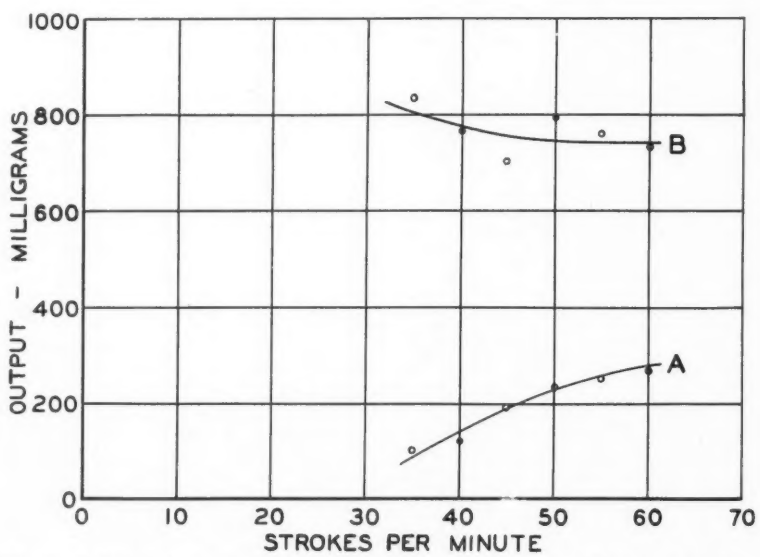


Fig. 7. Relation between speed of operation and output of oil per stroke from sprayers A and B of Figure 3.

[1]Woodbury, E. N. and C. S. Barnhart. 1939. Tests on crawling insects. *Soap and San. Chem.* 15(9):p.107.

PETROLEUM CRESYLIC ACIDS

Their composition, manufacture, and use in disinfectants

By D. B. Luten, F. A. Bent, and M. L. Griffin*

Shell Development Co.

THE presence of phenols in cracked petroleum distillates, and, to a lesser extent, in crude petroleum from certain fields, has been recognized by petroleum technologists for many years. The technical literature as far back as 1881 contains references to such occurrences. In many cases isolation and identification of individual phenols from petroleum sources have been reported; most commonly known of the compounds identified are phenol itself, the three cresols, and two xylenols, namely: 3,5 dimethyl phenol and 2,5 dimethyl phenol. In view of the common occurrence of phenols in cracked distillates which have been derived from phenol-free petroleum oil, it has been believed that they are largely formed during the cracking reaction.

When it is considered that the coking of coal and the cracking of petroleum are to a certain degree analogous in that they represent high-temperature decomposition processes operating on naturally occurring hydrocarbon materials, it should not be surprising that phenols occur in cracked petroleum distillates as well as in the distillates obtained from the coking of coal. As a matter of information, somewhat off the subject of this paper but of importance as indicating some further similarity of the products of petroleum cracking and coking of coal: in certain modern cracking operations, in which the temperatures used approach those used in the low-temperature carbonization of coal, appreciable quantities of aromatic hydrocarbons similar in nature to the neutral coal tar oils are formed. Relatively high-boiling fractions of these aromatic hydrocarbons similar to coal-tar solvent naphthas are on the market. Such products contain up to 90 per cent aromatic hydrocarbons, the chemical constituents of which have been identified as benzene homologues, naphthalene homologues (such as methyl and dimethyl naphthalenes), and anthracene.

In this paper, the terms "phenols" and "alkyl phenols" will be used synonymously as descriptive of phenolic compounds of all boiling-ranges, regardless of source. These are preferred to such terms as "tar acids" and "cresylic acids," which are commonly used, because the latter are not, from either the technical or the practical standpoint, exactly descriptive of all ranges of phenolic homologues. The term "cresylic acid," as defined in the literature and as formerly used in commerce, identified a mixture of ortho-, meta-, and para-cresols in the proportion in which they occur in coal tar. But in recent years the designation, "cresylic acid," has been applied to all sorts of mixtures of phenolic compounds boiling above 190° C. Almost every manufacturer and user has his own specifications for cresylic acid; today it may be any mixture, in almost any proportion, of the three cresols, the six isomeric xylenols, and higher-boiling tar acids. Imports of crude cresylic acid, for example, are understood to be largely xylenol mixtures containing low percentages of the cresols. This loose application of the term, "cresylic acid," in recent years is due to the increased commercial application, particularly in the synthetic resin field, of the phenolic compounds boiling higher than the cresols. The term "tar acids" implies origin from coal tar and hence can not be properly descriptive of phenols derived from petroleum.

Within the boiling-ranges of the products to be considered in this paper there has been no evidence of the presence in petroleum alkyl phenols of any phenols other than those of the monohydric type. This is, of course, the class to which phenol and its alkyl homologues, such as the cresols and xylenols, belong. The molecular structure that identifies this class is a benzene ring in which one of the hydrogen atoms has been replaced by a hydroxyl group. A few simple characteristic monohydric phenols include phenol, orthocresol, 2, 5, dimethylphenol, and ortho ethyl phenol whose structures are shown in Fig. I.

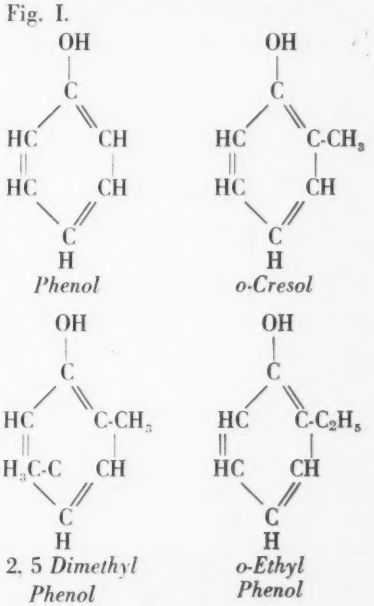


Figure I

As a result of a study of the alkyl phenols available from its operations, the Shell Oil Company of

*Paper delivered by Mr. Griffin before 25th annual meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., Washington, D. C., Dec., 1939.

D&O

ESTABLISHED IN 1798

ROTOPYRESSENOL #20
and
MORIBUND "KILL"

THE December convention of the N.A.I.D.M. deferred making any alteration in the existing Official Standard for household insecticides by incorporating moribund "kill." There was no lack of recognition of its importance, but the admitted difficulties of arriving at a uniformly acceptable and reasonably accurate moribund count and the uncertainty as to how to weight it properly in the Official Standard require further study.

In the meantime, one point remains unchallenged. The concentrate which meets all requirements for rapidity and completeness of knockdown and twenty-four-hour kill and **in addition** gives a high moribund "kill" is giving both manufacturers and consumers substantial added value at no extra cost.

ROTOPYRESSENOL No. 20, used at the regular 1-to-19 dilution, gives the highly desirable quick knockdown and the standard twenty-four-hour kill plus the "added values" of moribund "kill," leg paralysis and superior efficiency against crawling insects, and costs substantially less than straight Pyrethrum.

The articles "What of Moribund 'Kill' " and "Test Methods for Recording Moribund 'Kill' " from the October and November issues of SOAP are available in reprint form on request.

DODGE & OLCOTT COMPANY

180 Varick Street . . . . New York, N. Y.

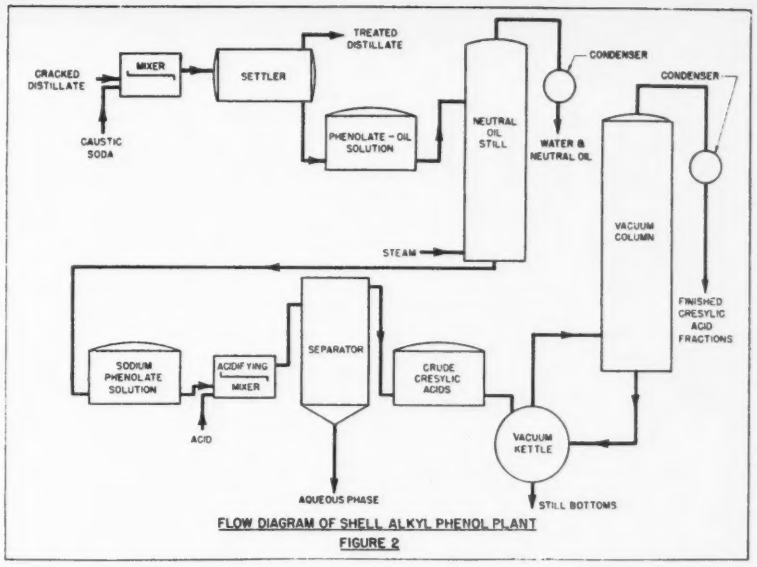
BOSTON : CHICAGO : PHILADELPHIA : ST. LOUIS : LOS ANGELES

Plant and Laboratories . . . . Bayonne, N. J.

California started production early in 1937 and have operated continuously since then. The Shell process (Fig. 2) for the extraction and recovery of the crude alkyl phenols is in many respects similar to that used by the coal tar industry.

In operation, cracked distillate containing phenols is thoroughly mixed with caustic soda solution, which extracts the phenols as sodium phenolates. The aqueous phenolate solution, containing some dissolved neutral oil, separates from the distillate by settling. The neutral oils are removed from this phenolate-oil solution by a simple steam distillation, leaving behind the sodium phenolate solution which is then acidified to free the alkyl phenols. On standing, the latter separate from the aqueous phase as a top layer and are skimmed off. The crude alkyl phenols are then distilled in a vacuum fractionating column into cuts of specified boiling-ranges.

The properties of the various products initially produced in the operations just described are shown in Table 1. Due to the presence of sulfur-containing impurities, the odors of these crude grades are strong and unpleasant. This has limited their general application to uses in which odor is of no consequence. These crude petroleum phenols are satisfactory however for ore flotation, certain phases of synthetic resin manufacture, and in the preparation of chemical derivatives, in which case the cresylic acids may be specially purified prior to use.



FLOW DIAGRAM OF SHELL ALKYL PHENOL PLANT
FIGURE 2

For Use in Disinfectants

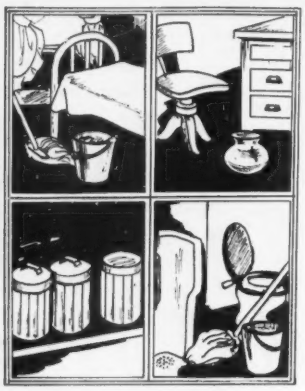
As the availability of alkyl phenols from petroleum became known, numerous requests were received for purified products that would be suitable for use in disinfectants. In the resulting development of refining methods, a number of factors made it desirable to offer high-boiling rather than low-boiling phenols. Accordingly, the refined grades 4020A and 9035A became commercially available. These grades correspond in boiling-range to the crude grades of the same numerical code designation but are considerably improved in purity and odor.

Subsequent to the development of these two refined grades of high-boiling petroleum alkyl phenols, suitable methods for refining the low-boiling 2000 grade were devised. However, they have not yet been put into commercial operation. These processes will enable the production of a low-boiling cresylic acid and such narrow fractions as U.S.P. cresol and 10° xylenols, all suitable for use in disinfectants. For general information, the properties of various low-boiling fractions which have been prepared in the laboratory by refining the grade 2000 Cresylic Acid are shown in Tables 2, 3, and 4, in comparison with the properties of typical similar fractions from coal tar phenols. It will be noted that these laboratory phenol fractions from petroleum alkyl phenols compare favorably with the coal tar products in both physical properties and chemical composition.

During the development of refined grades 4020A and 9035A, a simultaneous investigation of the use of these grades in phenolic disinfectants was also made, although the existing standards of the disinfectant manufacturers exclude any phenols except those derived from coal tar. Coal-tar derivatives alone were approved in Commercial Standards Specifications CS70-38 and CS71-38 for emulsifiable coal tar disinfectants and soluble cresylic disinfectants. Since the disinfectant-manufacturing industry in general conformed with these specifications, it was necessary

Table 1
Petroleum Cresylic Acids

	Grade 2000	*Grade* 3500	*Grade* 4020	*Grade* 9035
Specific Gravity, 20/4° C.	1.020	1.014	1.007	1.016
Neutral Oil, % by volume	<0.4	<0.4	<0.4	<0.4
Solid matter, %	0.0	0.0	0.0	0.0
Distillation (S.D. E25-38)				
I.B.P., °C.	199	213	222	243
F.B.P., °C.	225	240	241	291
5% Pt., °C.	204	214	224	245
10% Pt., °C.	205	217	225	248
20% Pt., °C.	206	218	225	250
30% Pt., °C.	207	219	226	253
40% Pt., °C.	208	221	227	254
50% Pt., °C.	209	222	227	257
60% Pt., °C.	210	223	228	259
70% Pt., °C.	211	226	229	262
80% Pt., °C.	213	227	231	267
90% Pt., °C.	215	231	234	278
95% Pt., °C.	219	236	238	288
% Distilled	99.0	99.0	99.0	98.0



PER-GERM

A New

DISINFECTANT

Modern **PER-GERM** *Destroys Noxious Odors*

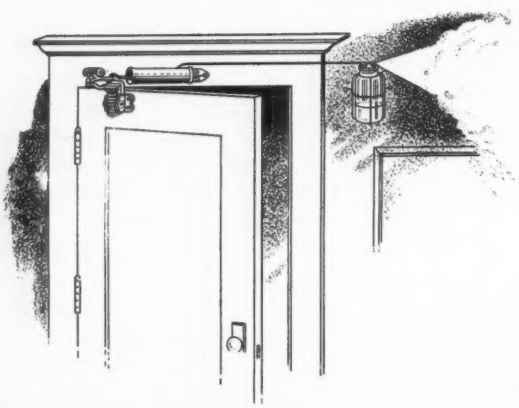
Leaves a Clean, Perfumed Fragrance . . . Won't Burn Skin

PER-GERM disinfects, cleans, deodorizes—does it all in one LOW COST application. Designed by industrial chemists for institutions, factories, hospitals, etc., PER-GERM is so fragrant that jobbers who sell it take it home for use in the bath. Its phenol coefficient of 3 plus F. D. A. method is guaranteed.

Powerful, yet non-poisonous, PER-GERM does not injure clothes, paint, metal, woodwork. It does not burn skin—even at full strength. PER-GERM is the biggest good will building disinfectant made. Available for private brand. Same price. Write today for sample and attractive prices.

Increase Your Disinfectant Sales!

By Selling **PER-GERM** *along with the New* **PER-GERM-A-DOR**—



A Device That Sprays PER-GERM into a room each time the door is opened and closed.

For a limited time only we are offering one PER-GERM-A-DOR **FREE** with each 55-gallon drum of PER-GERM. You too can make this attractive offer to your customers.

HYSAN PRODUCTS COMPANY

MANUFACTURING CHEMISTS

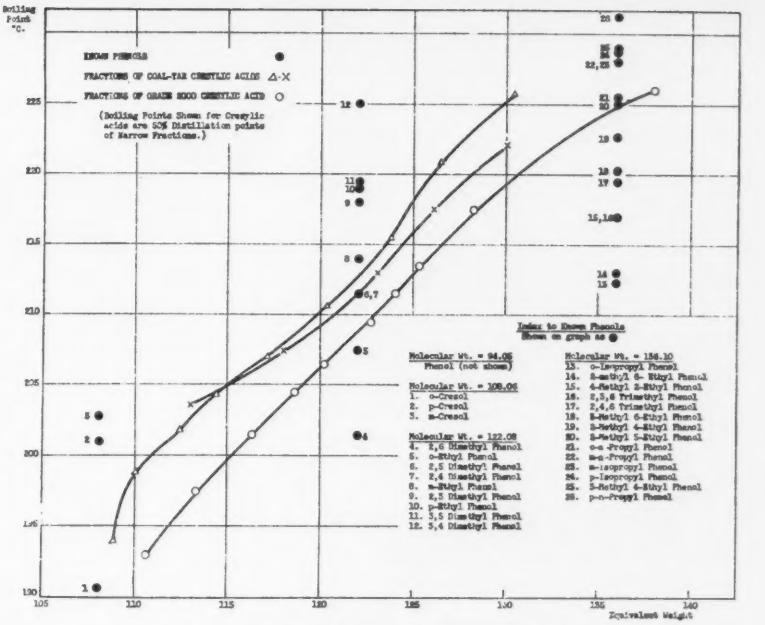
Specialties for Hygiene and Sanitation

2560 ARMITAGE AVENUE • CHICAGO, U. S. A.

to establish the similarity of petroleum alkyl phenols with those derived from coal tar, and further, to demonstrate successful formulation of disinfectants according to the Commercial Standard Specifications, and to determine the germicidal values of the preparations.

In order to demonstrate the similarity of petroleum alkyl phenols with those derived from coal tar a study of the chemical constitution of the former has been made; a few significant data have been compiled for this paper.

Owing to the multiplicity of phenolic isomers and homologues present in alkyl phenol mixtures boiling above the cresols, no general attempt has been made to isolate and identify individual phenols in the overall boiling-range of the products under discussion. However, in the lower boiling-ranges where the difficulty of separation is less, a few pure phenols isolated from the petroleum alkyl phenols have been identified. Three high-boiling products, 2,3,5 trimethyl phenol, 2,4,6 trimethyl phenol and 2,3,5,6 tetramethyl phenol, were also isolated. The compounds identified are listed in Table 5 with some physical properties. In addition to the pure phenols shown in Table 5, meta and para-cresols have been identified in low-boiling fractions, such as the U.S.P. cresol cut described previously and others in that same range.



PLOT OF EQUIVALENT WEIGHT AGAINST BOILING POINT, FOR EKOMS PHENOLS, COAL-TAR CRESYLIC ACIDS, AND GRAIN HOOD CRESYLIC ACID

Figure 2

Table 2
Comparison of U.S.P. Cresol Fractions from Petroleum Alkyl Phenols with Commercial Coal-Tar U.S.P. Cresols

	U.S.P. Cresol ex Petroleum Alkyl Phenols	*Commercial U.S.P. Cresols Samples Nos.* 1	2
Specific gravity, 25/25° C.	1.036	1.034	1.037
Acetyl value, equiv./100 gms.	0.897	0.910	0.908
Average molecular weight	111.4*	109.8*	110.0*
Neutral oil, % by vol.	<0.4	<0.4	<0.4
Sulphur, % by wt.	0.0004	0.007	0.035
Distillation-range			
I.B.P., ° C.	191.5	188	191
F.B.P., ° C.	205	205	202
5% Pt., ° C.	195	200	197
10% Pt., ° C.	195	200	198
50% Pt., ° C.	196.5	201	199
90% Pt., ° C.	199.5	203	201
95% Pt., ° C.	201	204	202
Phenolic constituents			
Phenol, % by wt.	3.9	1	4
Ortho Cresol, % by wt.	42.2	10	16
Meta Cresol, % by wt.	16.8	54	52
Para Cresol, % by wt.	18.5	28	28
Xylenols, % by wt.	18.6	7	0

*These values calculated from acetyl values. Experience with pure compounds has shown that values thus obtained for molecular weights are usually 1-2 per cent higher than theoretical values.

Table 3
Comparison of Xylenol Fractions from Petroleum Alkyl Phenols with Commercial Coal-Tar Xylenols

	210-220° C. Xylenol *ex Petroleum Alkyl Phenols*	*Commercial Xylenols Samples Nos.* 1	2	3
Specific gravity, 25/25° C.	1.0150	1.0198	1.014	1.0230
Acetyl value, equiv./100 gms.	0.80	0.82	0.800	0.84
Average molecular weight	125	122	125	119
Neutral oil, % by vol.	<0.4	<0.4	<0.4	<0.4
Sulphur, % by wt.	0.002	0.002	0.028	0.010
Distillation-range				
I.B.P., ° C.	211	211	106*	201
F. B. P., ° C.	221	238	226	217
5% Pt., ° C.	212	212	218	207
10% Pt. ° C.	212	212	218	208
50% Pt., ° C.	214	215	220	209
90% Pt., ° C.	217	221	222	213
95% Pt., ° C.	218	230	223	215
Phenolic Constituents				
Phenol, % by wt.	0	0	0	0
Cresols, % by wt.	1	—	—	—
Xylenols, % by wt.	84	—	—	—
Higher alkyl phenols, % by wt.	15	—	—	—

*Low I.B.P. due to presence of water.

The grades 2000 and 4020 have each been fractionally distilled into a series of narrow boiling-range cuts, so narrow that in some cases the individual cuts could be considered to be relatively simple mixtures. These cuts were examined analytically to determine average equivalent weight and other properties for qualitative comparison with similar data on pure individual phenols and narrow cuts from coal tar cresylic acids, The relations existing between equivalent weights and boiling-points of the various materials are shown graphically in Figures 3 and 4. In the cases of the narrow cuts, the 50

TO OPEN
Raise the Lever and the Cap lifts right off

TO RE-SEAL
Replace the Cap and press down the Lever

IT'S THE MOST SENSIBLE CAP I'VE EVER SEEN!

"Here, at last, is a cap I can understand! The handy lever of KORK-N-SEAL holds the cap down tight, protecting and preserving the contents. And yet any woman can open the container in a jiffy; a flip of the lever—and there it is! It re-seals the same convenient way; press the lever down—and the cap is back in place. All so easy. No struggling with tools, no fuss, no spilling, no mess.

"I've often wondered why the woman's angle isn't taken into consideration when closures are designed, but KORK-N-SEAL has done it. I think KORK-N-SEAL is the most sensible cap I've ever seen."

WILLIAMS SEALING CORPORATION
DECATUR, ILLINOIS
Division of Crown Cork and Seal Company

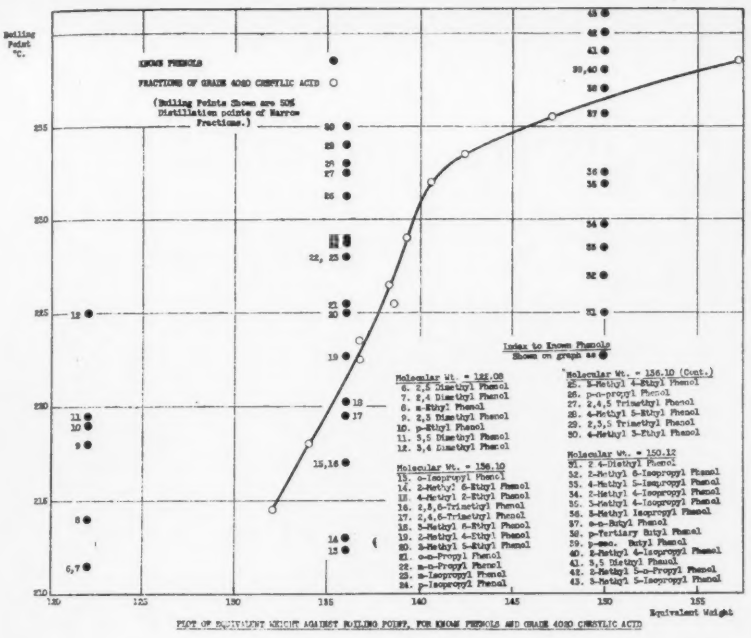
POUR-N-SEAL—A New Cap for Oval Pouring Spouts

The first really satisfactory cap for sealing and re-sealing oval pouring spouts. Makes a positive seal at all points of the spout, even at the pouring point. Easy to remove, easy to replace. Ideal for products that present a pouring problem. Full information, samples and prices are available.

"When It's Easy to Pour—It's Easy to Sell"

KORK-N-SEAL

THE CAP WITH THE HANDY LEVER



PLOT OF EQUIVALENT WEIGHT AGAINST BOILING POINT, FOR KNOWN PHENOLS AND GRADE 4080 CRESYLIC ACID

Figure 4

Table 4

Comparison of Low-Boiling Petroleum Cresylic Acid with Commercial Low-Boiling Coal-Tar Cresylic Acids

	Low-Boiling Cresylic Acid ex Petroleum Alkyl Phenols	*Commercial Low-Boiling Cresylic Acids, Samples Nos.* 1	2	3
Specific gravity, 25/25° C.	1.0213	1.0304	1.021	1.023
Acetyl value, equiv./100 gms.	0.83	—	0.84	0.81
Average molecular weight	120.5	—	119	123.5
Neutral oil, % by vol.	<0.4	<0.4	<0.4	<0.4
Sulphur, % by wt.	0.001	0.095	0.007	0.068
Distillation-range				
I.B.P., ° C.	202	195	204	109
F.B.P., ° C.	218	226	221	234
5% Pt., ° C.	203	201	207	202
10% Pt., ° C.	204	202	208	207
50% Pt., ° C.	207	205	211	211
90% Pt., ° C.	212	215	216	222
95% Pt., ° C.	215	220	218	228
Phenolic Constituents				
Phenol, % by wt.	1	—	1.2	4.4
Cresols, % by wt.	30	—	—	—
Xylenols, % by wt.	61	—	—	—
Higher alkyl phenols, % by wt.	8	—	—	—

per cent distillation points were taken as the boiling-points.

It can be seen from these graphs that the average equivalent weights and the boiling-ranges of the narrow cuts are in the proper range for alkyl phenol mixtures, as may be judged from the properties of the pure alkyl phenols. For comparative purposes, similar data for a series of narrow cuts from two commercial coal tar cresylic acids are also plotted on Figure 3. The similarity of the latter to the grade 2000 and the correlation of both with the pure alkyl phenols are apparent. Although this is, of course, only a qualitative comparison, the data are significantly characteristic of alkyl phenols and it may legitimately be assumed that the petroleum products are rather similar in composition to the coal tar products. The methods used were the same as those developed for identifying the individual phenols in cresylic acid from coal tar.

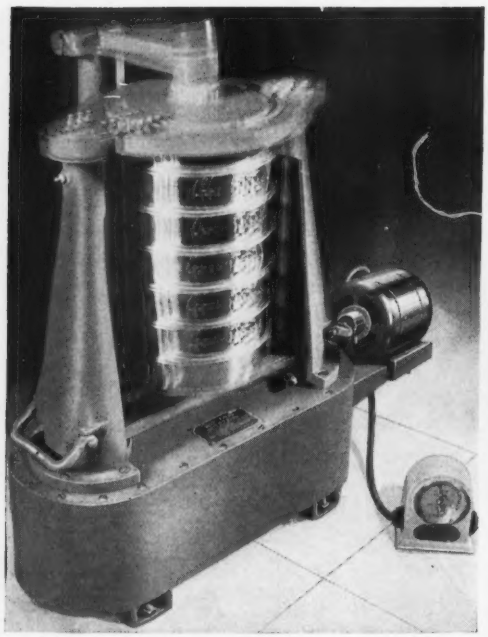
The isolation and identification of the low-boiling phenols shown in Table 5 and the chemical and physical similarity of the grades 2000 and 4020 to pure known alkyl phenols, demonstrated in Figures 3 and 4 by the graphical comparison of the properties of narrow fractions of these two grades with the properties of pure phenols, proves beyond reasonable doubt that these petroleum products are mixtures of monohydric phenols having characteristics similar to those of the alkyl phenols found in coal tar.

Formulation of Disinfectants

WHEN it was established that the phenolic cuts derived from petroleum are similar to those obtained from coal tar, being composed of the same individuals in the lower ranges at least, the use of the products in the preparation of satisfactory disinfectants was considered.

In the laboratory work on this, the Commercial Standards Specifications CS71-38 and CS70-38 were followed in principle in preparing soluble phenolic disinfectants and emulsifiable phenolic disinfectants from the 4020A and 9035A Cresylic Acids, respectively. Initially this formulation work was confined to the use of two soaps, potassium-castor oil and sodium-potassium-linseed oil. Early in this work it was found that a satisfactory soluble cresylic disinfectant could not be made from 4020A alone without the use of an excessive amount of soap; however, by replacing a portion of the soap with a mutual solvent, such as isopropyl alcohol, a satisfactory product could be obtained. The difficulty of obtaining a satisfactory soluble-type disinfectant without the use of isopropyl alcohol is due to the decrease in water solubility of the alkyl phenols with increase in molecular weight. It was also found that the inclusion of a small amount of isopropyl alcohol in the formulation of emulsifiable disinfectants with the 9035A improved the finished product; however, this is not essential. The method of preparation of each disinfectant is described in the succeeding paragraphs. The same general procedure was used in compounding the various formulas.

The proportionate quantities of soap and cresylic acid were heated under a reflux condenser until a clear



Shimmy Shaking Sieves!

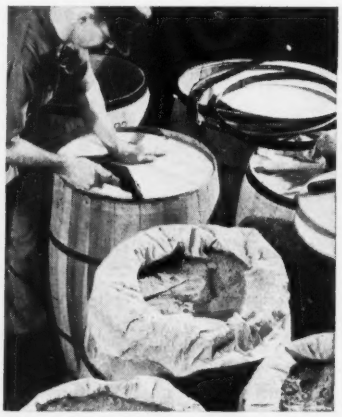
They help portray McCormick Methods which assure you of Finer Pyrethrum and Derris Insecticides

Nowhere in the world will you find Pyrethrum and Derris Powders which are ground finer than those produced by McCormick. Here, in action, is the Tyler Ro-Tap Testing Sieve Shaker which checks and tests with mathematical accuracy the fineness of every mill run of powder.

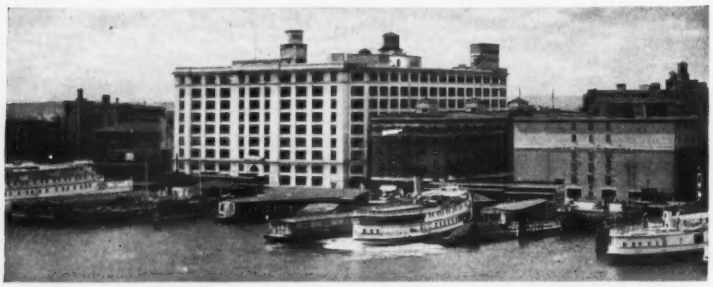
Exactitude in McCormick laboratory procedure is evidenced by the Chainomatic Scale which, used in chemical analysis, weighs rapidly to 4 decimal places! Accurate checks at every step, from raw materials to finished products, insure the uniformity and consistently high killing power of McCormick insecticides.

No Rule of Thumb guides the standards of effectiveness for McCormick insecticides. Every product is tested—every claim proved. For example, here is the Insectary where, with even the temperature controlled, flies are scientifically raised for actual killing tests.

Releasing Flies (left) in the "Peet Grady" Death House in the McCormick laboratories. At the right, a technician is about to release in the Death House the mist from an exactly measured quantity of a pyrethrum spray. Hours later, flies are checked numerically to ascertain by count and percentage the actual killing power of McCormick insecticides.



Finished Product ready to finish off insects! Because of their microscopic fineness, McCormick's Pyrethrum and Derris Powders contain a vastly higher number of killing particles to the ounce. Result: these particles stick more closely to insects, insuring a quicker, surer kill.



Dominating the skyline of Baltimore harbor is the great McCormick Building. Within its 12½ acres of floor space is one of the most complete analytical and biological laboratories in the insecticide industry. Such facilities assure products of dependability.

McCormick

Pyrethrum Powder **Derris Powder**

Derris Extract **Derris Resinate**

Rotenone Crystals

For further information address: The McCormick Sales Co., Baltimore, Md. In Canada address: McCormick & Co. (Canada), Ltd., 454 King St., West, Toronto, Canada.

solution was formed. Upon cooling the isopropyl alcohol was added and the mixture stirred until homogeneous.

The formulation of these disinfectants was as follows:

I. *Potassium-Castor-Oil Soap Type.*

A. 4020A Soluble Phenolic Disinfectant (Castor-Oil Soap).

	% by wt.
Potassium-Castor Oil Soap.... (Including water and glycerine)	38
4020A Cresylic Acid	51
Isopropyl Alcohol (Anhydrous)	11

B. 9035A Emulsifiable Phenolic Disinfectant (Castor-Oil Soap).

	% by wt.
Potassium-Castor Oil Soap.... (Including water and glycerine)	25
9035A Cresylic Acid	70
Isopropyl Alcohol (Anhydrous)	5

II. *Sodium-Potassium Linseed Oil Soap Type.*

These disinfectants were prepared in accordance with the above formulas except that the castor oil soap was replaced with the same quantity of linseed oil soap.

Preparation of Soaps

Potassium Castor Oil Soap Formula

	% by wt.
Solid Potassium Hydroxide (C.P.)	13.2
Distilled Water	13.2
Castor Oil (U.S.P.).....	73.6

The potassium hydroxide was dissolved in the water and the castor oil added with agitation and mild heating until saponification was complete.

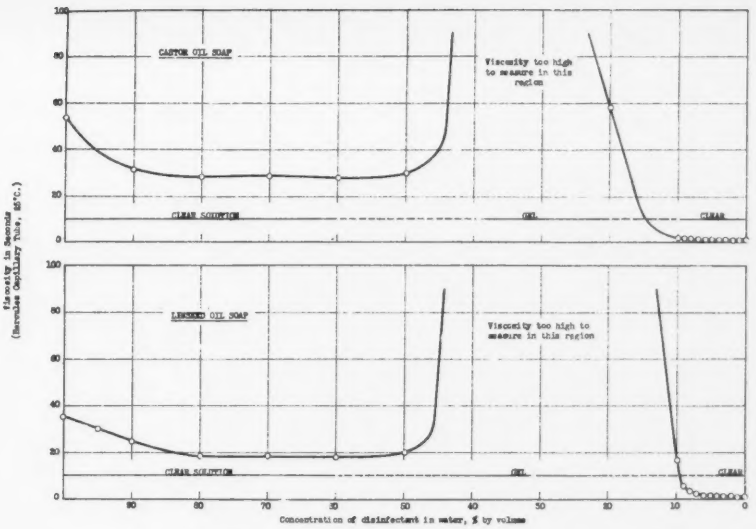
Linseed Oil Soap

The sodium-potassium linseed oil soap was prepared similarly, in accordance with the following formula which was adapted from the U. S. Pharmacopoeia XI, page 206:

	% by wt.
Solid Sodium Hydroxide (C.P.)	7.4
Solid Potassium Hydroxide (C.P.)	2.9
Distilled Water	25.0
Linseed Oil (U.S.P.).....	64.7

The viscosity and appearance of these four disinfectants at various dilutions with distilled water are shown in Figures 5 and 6.

It will be noted that the two soluble-type disinfectants form clear solutions with distilled water at 1 per cent and 4 per cent concentrations, as required by the Commercial Standards Specifications CS71-38. The emulsifiable disinfectants formed stable, turbid emulsions at 2 per cent concentration, as required by the Commercial Standards Specification CS70-38 for disinfectants having a phenol coefficient over 10.



VISCOSITIES OF MIXTURES OF 4020A SOLUBLE PHENOLIC DISINFECTANTS WITH WATER

Figure 5

Germicidal tests made on these four disinfectants by an independent laboratory[1] early this year and repeated six months later to determine storage stability have given the results shown in Table 6.

The laboratory reporting these phenol coefficient values, made the following comments in the report covering the October tests:

"There are practically no changes in the values as the differences to be noted are usually within the limits of the accuracy of the method of test. The starred samples are the only ones that are not well within the usual variations and may denote changes with aging, but are not greater than would be found with coal tar disinfectants. Especially in the extremely high coefficients a change of one dilution of the disinfectant or of the phenol makes several units difference and check results are not as easily obtained.

"We would interpret these results as showing the samples to be substantially the same after six months' storage."

While the results of these tests apply only to the disinfectants tested, they do indicate the high germicidal properties of the 4020A and 9035A Cresylic Acids.

[1]Skinner & Sherman, Inc., Boston, Massachusetts.

Table 5
Properties of Pure Phenols
Isolated from Petroleum Alkyl Phenols

	Equivalent Weight		*Boiling-Point, °C.*		*Melting-Point, °C.*	
	Determined	*Theoretical*	*Observed*	*Literature*	*Observed*	*Literature*
Phenol	96.2	94.05	182-184	182	37.9	41.0
ortho-Cresol	108.8	108.06	190.5-191.0	190.5	30.3	30.5
2,6-dimethyl Phenol ...	122.0	122.08	201.5	203, 212	45.5	47-48, 49
2, 5-dimethyl Phenol ...	124	122.08	212	211.5, 213.5	76	74.5, 75
2, 3, 5-trimethyl Phenol ...	136.2	136.10	234	230-231 233, 234	94.5	94, 95
2, 4, 6-trimethyl Phenol ...	138	136.10	219-220	219.5, 221, 220-222	72.0	68, 68-69 72-72.5
2, 3, 5, 6-tetramethyl Phenol ...	149.0	150.11	251-252*	249, 250	118	117, 118-119

*Corrected stillhead temperature of cut from which greatest percentage of the phenol was obtained.

Add—PROTEXED* MORIBUND KILL

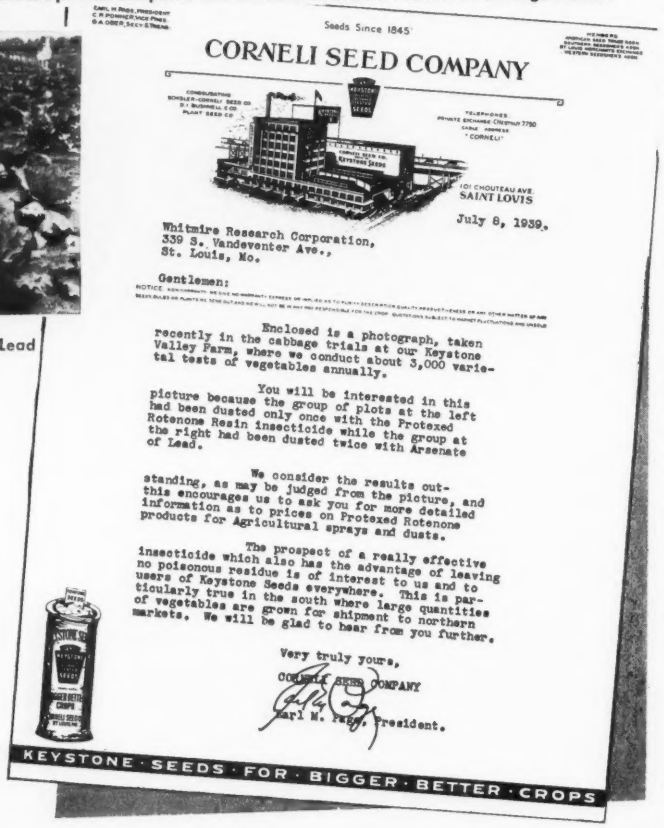
(PERMANENT LEG PARALYSIS)

to the qualities already present in your

DUSTS, OIL-TYPE OR WATER-TYPE SPRAYS

Here are the facts on field results obtained by a prominent mid-western seed company who tested an agricultural dust containing Protexed cube resins and rotenone in conjunction with cube powder compared with Arsenate of Lead for control of cabbage worms:

Protexed Dust vs. Arsenate of Lead



Seeds Since 1845

CORNELI SEED COMPANY

101 CHOUTEAU AVE.
SAINT LOUIS

July 8, 1939.

Whitmire Research Corporation,
339 S. Vandeventer Ave.,
St. Louis, Mo.

Gentlemen:

Enclosed is a photograph, taken recently in the cabbage trials at our Keystone Valley Farm, where we conduct about 3,000 varietal tests of vegetables annually.

You will be interested in this picture because the group of plots at the left had been dusted only once with the Protexed Rotenone Resin insecticide while the group at the right had been dusted twice with Arsenate of Lead.

We consider the results outstanding, as may be judged from the picture, and this encourages us to ask you for more detailed information as to prices on Protexed Rotenone products for Agricultural sprays and dusts.

The prospect of a really effective insecticide which also has the advantage of leaving no poisonous residue is of interest to us and to users of Keystone Seeds everywhere. This is particularly true in the south where large quantities of vegetables are grown for shipment to northern markets. We will be glad to hear from you further.

Very truly yours,
CORNELI SEED COMPANY
Earl M. Reed, President.

KEYSTONE · SEEDS · FOR · BIGGER · BETTER · CROPS

Dusts or sprays containing Protexed Rotenone Products give a definite economical control of resistant agricultural insect pests and household crawling insects through *permanent leg paralysis* (MORIBUND KILL).

Your own laboratory or field tests will quickly prove the advantages of adding this new killing property, "Leg Paralysis" to your dusts and oil-type or water-type sprays.

This *Moribund Kill* is obtained with Protexed* Dusts or Concentrates in your dusts or sprays where insects are contacted directly or where insects walk over dusted or freshly sprayed surfaces.

***PROTEXED**— MORIBUND KILL . . . *Once Down . . . Forever Out!*

PROTEXED	PROTEXED	PROTEXED	DIHYDROLIN
Dust Containing 25% Cube Resins and Rotenone	Agricultural Resins and Rotenone concentrates for sprays	Derris Extract #10 for Crawling Insects	for Moribund Kill in Fly Sprays
$1.25 per lb.	$3.85 per gal. & up	$1.50 per gal.	$5.85 per gal.

***PROTEXED**—Trade name covering our patented process for treating Rotenone in Derris and allied resins chemically and physically for stabilization (protection of toxicity) against light and impurities found in inert bases.

WHITMIRE RESEARCH CORPORATION

339 SOUTH VANDEVENTER · SAINT LOUIS · MISSOURI

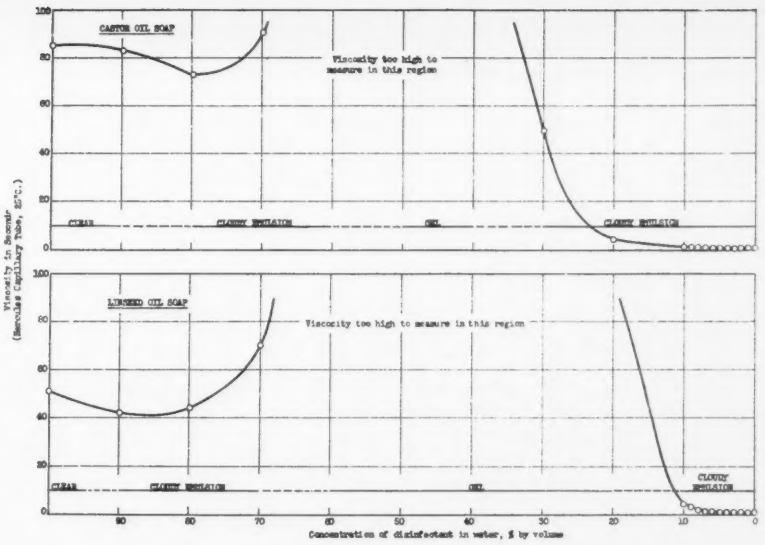
WRC

Skin Irritation and Toxicity

DURING the laboratory work with the petroleum alkyl phenols, it was noted that skin irritation due to contact with the higher-boiling fractions, such as grades 4020 and 9035 and the corresponding "A" products, was considerably less severe than with the lower-boiling alkyl phenols from either petroleum or coal tar. This is to be expected when it is remembered that the skin irritation caused by the lower-boiling phenolic homologues decreases in the order: phenol, cresols, xylenols. As the toxicity of these lower-boiling materials also decreases with increase in boiling-range, it was thought that this relationship might continue to hold for the higher-boiling phenols. In order to get some concrete data on these points an investigation of the effects of skin application of the 4020A and 9035A Cresylic Acids and the disinfectants prepared from them were made by the Pharmacological Laboratory of the University of California Medical School. Included in this investigation for comparative purposes were several lower-boiling phenolic fractions used generally by the disinfectant industry, and disinfectants prepared with them.

The tests in this investigation were performed on rats. The procedure was to remove the fur from the abdominal skin with an electric clipper and apply a one-centimeter square of gauze, which had been wetted with a measured amount of the material being tested, to the animal's skin. The gauze was immediately covered with a large piece of adhesive plaster. One hour later the plaster and gauze were removed and the area washed. This technique prevented the loss of the material through evaporation and kept the animal from licking the treated area, which would impair the reliability of the results because of possible internal poisoning. Also, by this technique the exact time of contact with the material was known.

Owing to the variation in individual response of the animals a comparison of the individual materials was impossible; however, a separation into two groups could be made on the basis of the severity of systemic poisoning following the application of 1.0 cu. cm. per kg. of animal weight.



VISCOSITIES OF MIXTURES OF SODIUM EMULSIFIABLE PHENOLIC DISINFECTANTS WITH WATER

Figure 6

The low-boiling cresylic acids and the disinfectants prepared from them, which form one group, were the most severe in both skin irritation and toxicity. They were readily absorbed through the skin quickly enough and in large enough amounts to cause convulsions and ultimate death within a reasonably short time after application. In most cases they caused faster and shallower breathing immediately after application. The convulsions began 5 to 30 minutes after application and lasted a maximum of 4 hours. If death did not result in a few hours, the convulsions disappeared and the animals were practically normal by the following day. Those few that survived seemed normal for the next three or four days except that they were rather quiet and their fur somewhat ruffled.

Where the plaster and gauze had been, the skin was found to be discolored and varied from reddish-brown to dark bluish-brown. The discolored area exceeded the size of the gauze and its borders were bluish. Occasionally there was some hardening of the area. The discoloration persisted until the skin sloughed off about a week later.

The 4020A and 9035A Cresylic Acids and the disinfectants prepared from them did not cause convulsions or other serious symptoms of systemic poisoning. The skin reaction to these materials was variable, but, in general, only slight. In some cases no discoloration was present, but in an occasional animal a superficial erosion occurred. In no case was the affected area greater than the size of the gauze.

In general, the results of this investigation on rats are not necessarily applicable to man; however, it is reasonable to assume that a compound which is dangerous to rats will be dangerous to man. Of course, the relationship of dose to effect will probably not be the same. In considering these statements it must be

(*Turn to Page* 119)

Table 6
Phenol Coefficients of Disinfectants prepared from High-Boiling Petroleum Alkyl Phenols

Type of Disinfectant	*Phenol Coefficient by F.D.A. Method*			
	Against E. typhi		*Against Staph. Aureus*	
	March 1939	*Oct.* 1939	*March* 1939	*Oct.* 1939
4020A Na-K Linseed Oil	8.3	9.1*	7.3	7.9
4020A K Castor Oil.....	12.9	12.7	7.4	6.2*
9035A Na-K Linseed Oil.....	32.0	32.0	24.6	24.8
9035A K Castor Oil.....	36.0	40.0*	23.6	25.8

Comments on Shellac

Statements in regard to shellac made in an article on "Non-Wax Floor Polishes" by Charles S. Glickman in the November and December issues of *Soap & Sanitary Chemicals* are commented upon by E. Hicks of William Zinsser & Co., New York, as follows:

"Articles in your November and December issues on Non-Wax Floor Polishes, by Mr. Charles Glickman, have been of particular interest to members of the American Bleached Shellac Manufacturers Association, in view of the fact that pure shellac has proved to be of great value as a constituent of these polishes. Its use for this purpose has been increasing steadily, according to reports reaching us.

Mr. Glickman, on the other hand, gives almost no mention to the uses and virtues of shellac in these polishes. The various recipes he sets forth fail to include it. His chief mention of shellac, indeed, is to question its value, as when he says: 'Those polishes prepared with pure carnauba wax and a small amount of emulsifier or protective colloid have a higher initial gloss, a longer lasting lustre and greater wear resistance than those products prepared with shellac or rosin, etc.'

We are not prepared to speak in behalf of rosin, which is not interchangeable with shellac or in the same category, but we are fully prepared to validate the superiority of the product which contains shellac as an ingredient. The better non-wax floor finishes use shellac as an addition agent, and are definitely superior in almost every way to the product made with an ordinary soap or rosin compound. The shellac forms a bonding film in drying, which spreads the wax and leaves it in condition to protect and beautify the floor. The shellac creates gloss, reduces slipperiness, gives the finish a long life.

Aqueous no-rubbing floor polishes are of course not meant to be the same as wax pastes, nor are they similar to the wax-free rosin solutions which Mr. Glickman describes in detail. Each may have a place with corresponding advantages. But no one could gather this from reading Mr. Glickman's articles. Furthermore, Mr. Glickman makes his statements without distinguishing between good and poor products and high grade and low grade materials, and also without discussion of the different purposes for which the finishes are to be used—such as school or factory floors, household or drawing rooms, bowling alleys, etc.

In view of the fact that Mr. Glickman's articles seem intended to

(*Turn to Page* 130)

EMULSION FLOOR WAXES

By Melvin Fuld*

Fuld Brothers

IN A previous report dealing with wax testing, the use of a treated paper was suggested as a means of obtaining uniform laboratory testing surfaces. It was soon learned however that accuracy of the testing surface brought to light the inaccuracies of application methods.

We were quite successful in applying waxes to the Bakelite treated paper by the use of an applicator. Spray application was also successful and produced an excellent film. The disadvantage of the spray method, however, was that the equipment was very expensive and secondly, comparatively large areas were necessary to obtain good, coated surfaces. Also, the results of spraying on the Bakelite Paper could not be duplicated on linoleum floors for field testing. We thus set about to determine some simple inexpensive method for uniform application of films. Most applicators for paint, varnish and lacquer films, it was found, require a high adhesion and higher viscosity characteristic than water emulsion waxes possess. The low viscosity of self-polishing wax does not allow for proper flow or distribution through spray guns. The hand applicator method seemed preferable, particularly since it is the method which will normally be used by the consumer.

On the basis of our experimental work it appeared that the best method of applying self-polishing waxes was to spin a film with a high speed centrifugal motion. This required circular plates with the thickness of the films controlled to 0.0001". A simple device was developed to spread the wax rapidly. It consisted of a metal roller highly polished and undercut from shoulders 0.001". It was found that by propelling it from a carriage and varying the weight on top of the carriage that duplicable films could be produced on various test panels. Experience showed that a definite concentration of wax should be used so that film thicknesses could be calculated. The wax should be applied at approximately 10 or 12 per cent non-volatile solids, as most all waxes on the market can be reduced to this percentage readily and uniform films result.

The need next developed for some simple method for determining a non-volatile solid of water emulsion floor waxes. A common method is that in which a known weight of sample (from 1 to 20 grams) is dried in an evaporating dish at a temperature slightly above 100°C. and the weight of the residue determined; the latter weight divided by the original being the per cent of the solids. This method, which is quite satisfactory with simple water solutions, often yields results with emulsion waxes which are in error as much as 20 per cent to 30 per cent.

With samples of over 5 grams the emulsion breaks down in a short time with the result that a layer of molten wax forms on the surface of the liquid. The escape of water vapor is seriously hampered and incomplete drying is likely unless the temperature is raised sufficiently so that the vapor bubbles through the wax layer. This bubbling may cause spattering and consequent loss of some of the molten wax. Increasing the drying time results in serious errors of a different nature.

The determination of solids as directed in some of the more common specifications is carried out without exception by drying a weighed quantity of the emulsion, generally either 5 to 10 or 1 to 1½ grams. The temperatures are normally a little over 100°C. The time is usually not expressed, directions being given "to dry to constant weight". Little attention is given to the apparatus or the evaporating vessel. Technique singularly enough is left to the discretion of the operator.

ONE of the first points to receive consideration in our attempt to develop a more accurate and dependable method was the correct working temperature. A series of determinations were made at 110°C. with an emulsion known to contain 15.0 per cent non-volatile solids. The quantity of sample taken varied from 2 gr. to 20 gr. Weighings were made at regular intervals starting the third hour and hourly thereafter to the sixth hour, then several times daily until 60 to 100 hours had elapsed. Before each weighing the sample was cooled 5 minutes in the desiccator and immediately following the weighing it was again placed in the oven.

The results throughout were lower than the known value. It seemed impossible to arrive at a con-

Spec.	*Sample Size*	*Drying Time*	*Temp.*	*Notes*
Penna. '38	5-10 gm.	Const. wt.	100-150 C	Suitable tared recept.
Penna. '36	10 gm.	16 hr.	Not over 100	100 gr. washed sea sand
N. Y. City	1- 1.5 gm.	Const. wt.	105-110 C	8 cm tin dish
RMA '37	5-10 gm.	Const. wt.	100-105	Suitable tared recept.
Procurement Div. U.S.T. 234	1- 1.5 gm.	Const. wt.	105 C	8 cm tin dish Porcelain crucible or
P W 151	2- 3 gm.	Const. wt.	100 then 105	dish.
Gardener	10-20 gm.	Const. wt.	105° C	Suitable tared recept.

*Address before 25th annual meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., Washington, D. C., Dec. 4, 1939.

"It's a grand and glorious feeling!" to be able to sit back and relax, knowing absolutely that the Penn-Drake Insecti-sol you use for your insecticide base will always remain 100% volatile and odorless.

The reason for the permanent purity of penn-drake Insecti-sol is quite simple. We don't try to cover up or neutralize the trouble-makers—we *remove* them! The exclusive Penn-Drake Karnsite process, which goes far beyond ordinary refining methods, eliminates every harmful impurity that the most stringent tests can discover.

With over sixty years' refining experience in the richest oil fields in the country, we can serve you efficiently and economically. Our research chemists have perfected an exclusive refining process that gives Penn-Drake Insecti-sol supreme quality. You can depend on it to retain the distinctive features of your insecticide. Its greater stability and absolute resistance to oxidation guarantee constant uniformity.

Let us send information on how to reduce your manufacturing costs and cut losses from deterioration. Write for full information on Penn-Drake Insecti-sol.

PENNSYLVANIA REFINING CO.

General Offices: BUTLER, PA.

REFINERIES AT
Titusville, Pa. and Karns City, Pa.

WAREHOUSE STOCKS MAINTAINED IN:
New York, Chicago, Detroit, Los Angeles, St. Louis, Atlanta, Boston, Scranton and Cleveland

penn drake
petroleum products

PENN-DRAKE PRODUCTS
U. S. P. White Oils and Technical Oils... Petrolatums... INSECTI-SOL ...Waxes... Naphthas ... Rubber Solvents Motor oils and greases ... High flash lubricants... Industrial lubricants and greases

SELL MORE INSECTICIDES

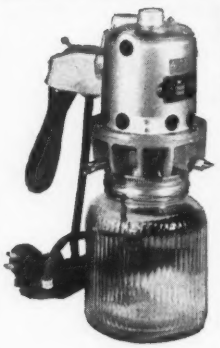
with

BREUER TORNADO ELECTRIC SPRAYER

Easier Sales—More Repeat Orders

New! Model 53G

Lowest Priced TORNADO Ever Offered



A new high quality compressor-type electric sprayer, selling at a sensationally low price, to help you reach the small users who could never before afford a really good sprayer. Ideal for groceries, restaurants, meat markets, taverns, hotels, rooming houses, etc. G. E. motor, genuine rotary compressor, stationary nozzle, wood pistol grip handle, 25 oz. glass container.

AUTOMATIC MODEL 54

One quart capacity. Set the automatic time switch at any point from 1 to 30 minutes — sprays desired quantity without further attention —automatically shuts off. Can also be used as a hand spray. Adjustable nozzle sprays in any position. Exclusive volume control regulates density of spray.

POPULAR MODEL 53

Our finest compressor-type electric hand sprayer. ⅛ H.P. G. E. Motor, genuine rotary compressor, adjustable nozzle for spraying in any position, exclusive volume control. Beautifully finished castings, one quart container. A compressor-type sprayer of the finest quality at moderate price.

ALSO

TORNADO Model 36 with automatic time switch, one gallon capacity
TORNADO Model 6 for mill spraying and moth proofing solutions
TORNADO Models 50 and 51 Fan Type units for crawling insects.

Write Today for Complete Information

Breuer Electric Mfg. Co.

5118 N. RAVENSWOOD AVE. CHICAGO, ILLINOIS

We do not sell insecticides. Our business is manufacturing Sprayers. Patented in U. S. A. and Foreign Countries.

stant weight. Duplicate samples did not check and in the case of the smaller samples which were dried as much as 100 hours the results were under 13 per cent.

A series of drys at 105°C. gave better results, though still quite unsatisfactory. To minimize errors such as evaporation and moisture absorption while weighing, scale sensitivity error and decomposition, comparatively large samples of 10 gr. and 5 gr. were used. The results, particularly as to agreement between samples run in duplicate, decidedly favored the 5 gr. samples.

With the possible use of even lower temperatures in mind, a number of special modifications were tried which provided greater evaporating surface and reduced the mechanical entrainment of the moisture within the sample. Small dried filter papers were placed in the evaporating dishes, these absorbing an appreciable portion of the liquid sample. After a few trials it became evident that a considerable evaporation was taking place while weighing, so weighing bottles were employed. Desiccating the balance also gave increased accuracy. Though in general results were in a little better agreement, the actual results were still consistently too low and the technique extremely critical.

A similar series using washed and dried asbestos fibre instead of the filter papers closely paralleled the results above. Washed and dried sea sand, tried in another series of tests in lots of 5 gr.-10 gr., was not so critical to error during weighing, but aided very little in the way of accuracy. Five gram samples dried at 100°C. in small crucibles were very slow to come to complete dryness, requiring from fifteen to twenty-four hours. At this point we received some suggestions and data from the National Bureau of Standards which gave a much clearer understanding of the factors involved. The next series was run as recommended in Federal Specification PW 151. "Place about 2 to 3 g. of original water-emulsion wax in a tared porcelain crucible or dish. Heat the material over a steam bath and then in an oven at 105°C. to 110°C. to constant weight. Calculate the percentage of non-volatile material."

In this method a very small sample is used which concentrates rapidly on the water bath without mechanical losses such as spattering or appreciable decomposition and is then dried completely at 105°C. in a relatively short time. Considerable error results, however, if the sample is put in the oven prematurely or left in the oven at 105°C. for an excessive period of time.

It was attempted to arrive at the non-volatile solids by difference from the percentage of water as determined with an apparatus similar to that used in the Deane and Starke Zylol distillation method. The receiver tube was of special design with a 20 ml bulb below the 5 ml graduated portion, which with a sample of 25 ml allows readings from 80 per cent to 100 per cent water to 0.01 ml or a theoretical accuracy of 0.04 per cent. Loss of water vapor occurred by incomplete condensation with ordinary reflux condensers and it was necessary to use a special one of high efficiency.

A fundamental disadvantage of this method is the fact that very volatile materials such as ammonia are partially lost,—which gives a low result for per cent water and too high a result for solids. It is possible also that solubilities in the xylol and steam distillation of certain ingredients of some wax emulsions would introduce further error. The overall accuracy attained was about 1 per cent. As this error is entirely too high for exacting work the method was abandoned except for use in making rapid rough determinations of solids where time does not permit a more accurate procedure.

THE method finally evolved from these investigations seems to be quite satisfactory. It is essentially that given in Specification P-W-151 except in respect to some very vital refinements and more detailed requirements. The balance should be of the analytical type with a working sensitivity of 0.1 mg. It should be equipped with a case and must be desiccated. The oven should be one of proper design for general drying work but should not be used simultaneously for any other work which may affect the sample. The temperature should be constant within at most 1 degree. If a water bath is used it should be equipped with concentric rings or openings of suitable size so that about 2/3 of the crucible sets below the top of the bath. In operation the water should boil constantly. A desiccator is necessary,—any of the conventional types. A pair of clean, rubber tipped wire tongs is essential for handling the crucible. A 2 ml volumetric or a 2-5 ml graduated pippette is used for introduction of the desired quantity of liquid into the crucible. The drying receptacles themselves are low form porcelain crucibles No. 2 Coor 5.6 cm diameter by 3.6 cm in height with a capacity of 50 cc fitted with regular crucible covers.

The crucibles are first prepared by heating them and their covers to red heat on triangles for 30 minutes in a carbon free gas flame. They are then placed in the desiccator and allowed to cool completely. A crucible and cover are then removed from the desiccator, placed on the balance and tared. The cover is lifted and approximately 2 ml of the liquid is introduced, the cover replaced and the sample weighed. The cover is lifted and approximately 2 ml of the liquid is introduced, the cover replaced and the sample weighed. The cover is again put into the desiccator and the crucible containing the sample put on the boiling water bath or in the drying oven at 100°C. for 3 hours. This serves to concentrate the sample without spattering or appreciable decomposition. It is then heated in the oven at 105°C. for 4 hours, at which time constant weight is reached. It is transferred to the desiccator for cooling and 5 to 10 minutes later to the balance. The cover is replaced and the unit weighed. It is convenient and satisfactory to use a dual thermostat in the oven set at 100°C. and 105°C. The 100°C.

(*Turn to Page* 123)

Prolonging Toxicity of PYRETHRUM INSECT SPRAYS

By Dr. R. B. Trusler*

Davies-Young Soap Co.

MANUFACTURERS of pyrethrum insect sprays have generally experienced appreciable losses in the toxicity of their products upon aging. This decline in potency has been attributed to the following causes, moisture (1), light (2), heat (3) and oxidation (4). The deterioration of pyrethrum solutions through the action of air has been studied by several investigators who have sought means for overcoming this change and for preserving the strength of the original solutions. Yates[4] has patented the use of a variety of mono-, di- and trihydric phenols, naphthols, alkylated and conjugated benzene compounds and homologues. Another patent allows Voorhees[5] the use of amino-anthraquinone compounds for antioxidants.

In the evaluation of the various antioxidants for their ability to preserve the toxicity of pyrethrum solutions, Gnadinger[6] found that some compounds exhibited very favorable action. These useful compounds appear to fall into the group of substances already patented. These ratings were based upon the amount of pyrethrins determined by assay, after an optimum number of days of standing at 35° C. In the investigation conducted by the author, long periods of time were allowed for deterioration to take place.

A quantity of pyrethrum fly spray was prepared from a concentrate and a highly refined "base." The preparation contained 0.2 per cent of soluble, active pyrethrum substance. Specimens prepared from this stock solution were kept in four ounce bottles provided with airtight screw caps.

The bottle with Specimen 1, was completely filled allowing no air space. The bottle containing 100 m.l. of Specimen 2, had about 25 per cent (25 to 27 cc.) air space to provide air for oxidation; Specimen 3 completely filled the bottle, allowing no air space and to it was added 0.2 per cent of an oxidizer, benzoyl peroxide. The three bottles were sealed and stored at a fairly uniform temperature of 32° C. for 36 months. The toxicity of these specimens to flies were then determined by the Peet-Grady Method. The results of these tests are shown in Table I.

It is to be noted that Specimen 1, exclusive of air, had practically permanent keeping qualities, while Specimen 2 in the presence of contained air, suffered a decrease of 34 points in its toxicity rating. The Specimen (No. 3) containing benzoyl peroxide, had become water white, excepting for a gummy deposit amounting to slightly over 0.3 g. The toxicity of this specimen has not been determined.

Another series of specimens were prepared from the same previously used stock solution in which small amounts of organic substances were added for antioxidants. These specimens were stored in the same kind of bottles as previously used, and about one-fourth of the volume was left unfilled as before, to supply air for oxidation. These bottles were likewise stored at 32° C. for 36 months. Peet-Grady tests were then run upon them to determine their change in toxicity for comparison with Specimen No. 2. The resulting data are shown in Table II.

Two of these compounds, namely eugenol and B-Naphthol, were also examined by Gnadinger[6] who had previously reported their effectiveness in the same order as shown in this table.

TABLE I

Specimen No.	*Description of Specimen*	*Av. Dead After 24 Hrs. Per Cent*	*N.A.I.D.M. Standard Per Cent*	*Rating*
1	Bottle full, no air space	85	61	+24
2	25% air space	56	66	—10
3	Bottle full, plus 0.2% benzoyl peroxide	resinous precipitate		

TABLE II

Specimen No.	*Description of Specimen*	*Av. Dead After 24 Hrs. Per Cent*	*N.A.I.D.M. Standard Per Cent*	*Rating*
	All specimens had 25 per cent air space.			
4	plus 0.2% p-phenyl phenol	70	62	+ 8
5	plus 0.2% benzaldehyde	75	62	+13
6	plus 0.2% eugenol	75	62	+13
7	plus 0.2% beta-naphthol	72	66	+ 6
8	plus 0.2% o-cresol	70	65	+ 5
9	plus 0.2% vanillin	61	65	— 4

*Paper before the 25th annual meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., Washington, D. C., December, 1939.

TABLE III

Specimen No.	Description of Specimen	Av. Dead After 24 Hrs. Per Cent	N.A.I.D.M. Standard Per Cent	Rating
10	25% air space, +0.2% oleic acid	70	64	+ 6
11	25% air space, +0.5% non-volatile olefine	91	61	+30
12	spray base, no pyrethrum, +0.5% non-volatile olefine	2		—46
13	Deodorized fly spray base	7		—39

TABLE IV

Specimen No.	Description of Specimen	Av. Dead After 24 Hrs. Per Cent	N.A.I.D.M. Standard Per Cent	Rating
14	Blank, 0.2% pyrethrum solution	69	60	+ 9
15	+0.2% pyr. sol. 1 week at 70°C.	56	56	0
16	+0.2% pyr. sol. 2 weeks at 70°C.	53	55	— 2
17	+0.2% pyr. sol. 3 weeks at 70°C.	55	58	— 3

TABLE V

Specimen No.	Description of Specimen	Av. Dead After 24 Hrs. Per Cent	N.A.I.D.M. Standard Per Cent	Rating
	All heated for three weeks at 70°C.			
18	Stock sol. +0.2% eugenol	60	61	— 1
19	Stock sol. +0.2% resorcinol	no tests, resinified		
20	Stock sol. +0.2% vanillin	35	42	— 7
21	Stock sol. +0.2% Thymol Der. No. 1*	58	53	+ 5
22	Stock sol. +0.2% Antioxidant "M"**	34	32	— 2
16	+0.2% pyrethrum, no antioxidant	55	58	— 3

*Trade name for iso-thymol made by Givaudan-Delawanna, Inc.
**An acetic acid ester of an aromatic alcohol made by Givaudan-Delawanna, Inc.

These data reveal a curious circumstance, that of two aromatic aldehydes exhibiting widely different properties. Benzaldehyde which appears to have been overlooked by researchers, has a very beneficial effect, and may be judged to be a safe material (to humans) to use. On the other hand, vanillin, so frequently used to render fly sprays agreeable in odor, seems to have an injurious action upon fly spray preparations. These data suggest that there may be other more effective antioxidants among the aromatic aldehydes.

Olefines, which generally predominate the sulfonatable portion of kerosene, and which should be absent from well refined bases, have been reported to preserve the toxicity of pyrethrum solution[4]. Poorly refined bases do not make satisfactory sprays because either their initial odor is bad, or they become too odorous upon aging.

However, there appear to be olefinic compounds that have very decided anti-oxidant properties, and which can be added to the pyrethrum solutions. Up to the present time, tests upon only two of these have been completed. One compound is commercial, low titer oleic acid; the other compound is a non volatile olefine prepared in the author's laboratory. These were added to the same pyrethrum stock solution used before, and again about 25 per cent air space was left in the bottles. These specimens were then stored at 32° C. for 36 months. The Peet-Grady tests upon these specimens are shown in Table III.

In order to obtain the significance of the result shown by Specimen II, a preparation (specimen 12) was made by dissolving 0.5g of the synthesized olefine in refined base, and determining its toxicity. A comparison of this specimen with deodorized base is also included in the table. The very low toxicity of this specimen shows that the olefine is definitely not toxic by itself. It must therefore be an effective inhibitor.

Data upon the impairment of pyrethrum sprays are too slowly obtained under normal conditions of storage to permit a comprehensive study of all probable antioxidants. It is obvious that the period allowed for commensurable change to take place should be much less than a year. The only way this can be accelerated is by increasing the temperature.

A study of the changes brought about by heating pyrethrum solutions at 70°C for periods of one to three weeks was made. The specimens were put in bottles, as previously done, allowing about 25 per cent unfilled for air space. Peet-Grady tests upon these, compared with an original specimen, not heated, are shown in Table IV. The deterioration of the specimens is progressive with the length of heating. The initial rating of the pyrethrum solution used in specimens 14 to 17 and in 18 to 22 was somewhat less than the initial rating of the pyrethrum solution used in specimens 1 to 12, hence the per cent change is not so impressive in data of Tables IV and V.

A comparison of the effects of added antioxidants was then made at this same temperature. Specimens were prepared from the stock pyrethrum solution used in the preceding tests, to which 0.2 per cent by weight of various compounds were added. Some of these had already been used in the long time tests shown in Table I. These results are shown in Table V.

The poor showing of eugenol in specimen 18 compared with the good result it gave in specimen 6, and also the rapid transition of resorcinol (No. 19) into insoluble material, indicates that 70°C is too high for these tests as it promotes underside changes in antioxidants that

do not occur under normal conditions. Specimen No. 19 is interesting, for here, again, vanillin made the resulting product worse than the blank test, Specimen 16.

At the present time a new series of ageing tests upon pyrethrum solutions an other herbaceous insecticides is being made at 50°C. The study includes alkyl olefines and both aryl and alkyl aldehydes. A supplementary report upon this progress may be given at some future time.

References

1. C. B. Gnadinger, Pyrethrum Flowers, Second Edition, Pg. 175.
2. C. B. Gnadinger, Pyrethrum Flowers, Second Edition, Pg. 172.
3. Ibid—Page 156, 167, 174.
4. Yates, W. J. Stabilizers for Pyrethrum oil sprays. Canadian Patent 343,209, July 17, 1934.
5. Vorhees, V. Light Stable Pyrethrum Extract. U. S. Patent 2,011,428. August 13, 1935.
6. Gnadinger, C. B. Pyrethrum Flowers, Second Edition, Pg. 171.

Petroleum Cresylic Acids

(*From Page* 107)

borne in mind that they are general only and that the skins of individuals may react quite differently from one another due to individual susceptibility to irritation or allergical differences, hence no definite rule for skin effects for the separate materials can be established. However, in any case, it can be expected that the relative effects would be similar to those shown for these materials; that is, the skin irritation and toxic effects of skin applications of alkyl phenols decrease with increase in boiling-range.

In addition to the work on the use of the refined grades 4020A and 9035A in phenolic disinfectants, the low-boiling fractions, U.S.P. cresol, 210-220°C. xylenol and low-boiling cresylic acid, shown in Tables 2, 3, and 4, respectively, were also used in the preparation of soluble-type disinfectants conforming in principle with the Commercial Standards Specifications CS71-38. Phenol coefficients determined on these finished products are shown in Table 7.

Summary

The petroleum products are being used successfully in the same commercial applications as those from coal tar, such as ore flotation, synthetic resin manufacture, preparation of chemical derivatives and d infectants. The high-boiling grades are finding favor particularly for use in disinfectants owing to their high germicidal value.

In summing up the work that has been presented in this paper it can be concluded that:

1. Alkyl phenols derived from cracked petroleum distillates are similar in composition to the alkyl phenols derived from coal tar distillates. In the lower boiling-ranges identical compounds are present in materials from both sources, while in the higher ranges related isomers and homologues are present in materials from both sources.

2. Petroleum alkyl phenols are satisfactory for use in saponified phenolic disinfectants. The higher-boiling fractions can be used in preparing high phenol coefficient disinfectants that will conform in performance to the requirements of the two Commercial Standards Specifications, CS70-38 and CS71-38.

3. Skin irritation and toxic effects resulting from skin applications of phenolic disinfectants prepared from 4020A and 9035A Cresylic Acids are considerably less severe than those resulting from disinfectants prepared from the lower-boiling alkyl phenols.

Table 7
Phenol Coefficients of Disinfectants prepared from Low-Boiling Petroleum Alkyl Phenols

Type of Disinfectant	*Phenol Coefficient by F.D.A. Method*	
	E. typhi	*Staph. Aureus*
Saponated Cresol Solution U.S.P. XI	2.3	1.6
Low-boiling Cresylic Acid (linseed oil)	4.1	3.2
Low-boiling Cresylic Acid (castor oil)	5.6	3.2
210-220°C. Xylenols (linseed oil)	5.3	4.2
210-220°C. Xylenols (castor oil)	6.3	4.3

Study of Hand Sprayers

(*From Page* 96)

present work, but a beginning was made in the study of drop size.

Drop Size Distribution

IT WAS hoped that stroboscopic photographs could be taken of the spray in the spray cone and that enlargements of such photographs would permit the measurement of droplets and the determination of their size distribution. Efforts to take such photographs have not yet been successful. Because of the possibility of failure, a sampling method previously used by Burdette[2] was adopted.

While a sprayer was being operated by the machine, a hanging drop microscope slide containing a drop of an aqueous 1 per cent solution of castile soap was held horizontally in the hand and lifted through the spray cone at a distance of 18 inches from the orifice of the sprayer (in the middle region of the spray cone). Drops of oil striking the soap solution were covered by it and were prevented from coalescing by the surface action of the soap. The slide was placed on the stage of a microscope and photographed at 50 diameters magnification on 2½ x 3½ inch film. Enlargements of 4 diameters were made from the negatives on 8 x 10 inch bromide paper, thus giving a total magnification of 200 diameters.

Examples of photographs of collected drops are shown in Figure 3, A and B. Upon inspection it is obvious that sprayer A (1 pt., intermittent) gives a finer and more uniform spray than that delivered by B (1 qt., continuous, livestock). Small drops are present in both samples but very large drops are present only in the sample from the continuous sprayer. This difference was consistent in many samples that were taken from these two sprayers.

For determination of drop size distribution the diameters of individual drops shown in the enlarged

[2]Burdette, R. C. 1938. Some of the principles governing the production of air-floated oil particles and their relation to the toxicity of contact oil sprays to insects. New Jersey Agr. Exp. Sta. Bull. 632, 31 p.

TABLE 1

Output factor of hand sprayers operated at 50 strokes per minute, reservoir ¾ full.

Series No.	*Capacity cc.*	*Diam. of Cylinder Inches*	*Length of Cylinder Inches*	*Number Tested*	*Oil Output Per Stroke mg.*	*Work Done Per Stroke ft.-lb.*	*Output Factor mg./ft.-lb.*
			Intermittent Sprayers				
1	170	1¼	7	24	154	3.64	42.3
2	250	1¼	7	12	233	5.87	39.7
3	400	1½	8½	24	117	13.56	8.6
4	1000*	1½	12	11	311	17.88	17.4
			Continuous Sprayers				
5	300	1	10	23	286	8.75	32.6
6	400	1	10	23	233	8.69	26.8
7	500	1	10	11	304	7.04	43.1
8	900	1	10	24	291	8.53	34.1
9	900**	1	12½	24	625	16.08	38.8
10	900	1	13	12	378	17.58	21.6
11	2000**	1	10½	6	266	11.58	23.0

*Operated at 40 strokes per min. because of the heavy load on the motor.
**Livestock sprayers.

photographs were measured to the nearest millimeter. The numbers of drops that occurred in each millimeter class were recorded and these size classes reduced to true dimensions in microns were plotted against the percentage frequency of occurrence of drops in each class. Resulting frequency distribution curves of samples illustrated in Figure 3, A and B are shown in Figure 4.

Note that the peak of the distribution in A is higher and the tail to the right shorter than the distribution in B. These curves simply show in a quantitative manner the difference in drop size distribution that is already evident in the corresponding photographs in Figure 3, A and B. The most frequent drop size (5 to 6 microns) is the same in both, but there is a larger portion of such drops in A and in B. On the other hand A contains a smaller portion of large drops than does B.

The significance of the large drops in terms of proportional volume or weight in the sample is not readily appreciated from examination of Figure 4. Accordingly weight distribution diagrams based on the two previous Figures were prepared and are shown in Figure 5, A & B. They indicate clearly that the most frequent drop sizes contribute only a small fraction of the total weight of a sample and that the bulk of the oil is found in the relatively few large drops. In one sample a single drop of 165 microns accounted for more than 30 per cent of the total weight of oil in the sample.

The sprayers A & B used in the foregoing comparative tests were selected as representative of performance of sprayers of series No. 3 and 9 respectively (Table 1). Intermittent sprayers, No. 3, have the lowest output factor of all sprayers tested, whereas continuous sprayers, No. 9, have a high output factor. It was suspected that the former produced a more uniformly atomized spray than the latter, which was confirmed by the studies described above.

Speed of Operation

FURTHER comparative tests were made of sprayers A and B with reference to the effect of speed of operation (from 35 to 60 strokes per minute) on work done, oil output, and drop size distribution.

For both sprayers the work done per stroke increased in direct proportion to speed of operation (Fig. 6).

The oil output per stroke of A increased with increasing speed; that of B decreased slightly as speed was increased (Fig. 7).

The drop size occurring most frequently from A was about the same at all speeds; that from B decreased with increasing speed of operation. No drops larger than 105 microns were produced by A at any speed, whereas drops larger than 300 microns were observed in samples from B, particularly at higher speeds.

No generalizations on the relative performance of continuous and intermittent sprayers can be made from the results outlined above, which may be unique for these sprayers. However, all the work that has been done leads to the conclusion that orifice construction and dimensions of the cylinder have a great effect on mechanical performance of hand sprayers.

When the relation between design and mechanical performance is thoroughly understood and complete data have been obtained for representative sprayers, we shall be in a position to study insecticidal performance intelligently and thereby to design or select sprayers best suited for particular purposes.

Summary

A MACHINE was designed and constructed to operate inexpensive hand sprayers at any desired constant speed. It was equipped with a dynamometer to measure work done per stroke as an index of ease of operation. Such measurements were made on 123 continuous sprayers and 71 intermittent sprayers of various sizes, and at the same time oil output per stroke was determined. As a factor expressing mechanical efficiency, the "output factor" was calculated in terms of milligrams of oil delivered per foot-pound of work done.

Two sprayers, one continuous and the other intermittent were studied more extensively to determine comparatively the distribution of drop sizes and weights in the spray delivered by each. The relation of speed of operation of these sprayers to work done, oil output, and drop size distribution was also studied.

Great differences were observed in the mechanical performance of different types and sizes of sprayers, but no general conclusions can yet be drawn, except to say that mechanical performance of hand sprayers depends largely on orifice construction and dimensions of the cylinder.

Emulsion Floor Waxes

(*From Page* 113)

setting is used instead of the water bath for the preliminary concentration and after 3 hours it is necessary only to change the switch for the 105°C. drying temperature.

Reasonable care in manipulation assures overall accuracies within 0.1 to 0.2 of 1 per cent. A 2 gr. sample of a product containing 12 per cent solids, for example, would leave a residue of 0.24 gr. or 240 mg. An accuracy of 0.1 per cent then represents a permissible overall error of only 0.24 mg. One-tenth mg. or 41 per cent of the allowable error is already incurred as scale error. An average drop of liquid weighs approximately 0.05 gr. or 50 mg. After deducting 0.1 mg. scale error from the 0.24 mg. allowable total error, there remains 0.14 mg. or the equivalent of about 0.0028 of a drop which we may loose by evaporation or incur as contamination. We have, however, taken into consideration above only the scale error for one weighing and three weighings are necessary. Nevertheless the above specified accuracy is quite possible under the conditions prescribed.

IN the correspondence which we have had with other laboratories most of them have stressed uniformity of film thickness as essential in all tests. We have received numerous suggestions as to what to use in determining end points on all sorts of tests after the uniform film has been laid down. Our results in laying uniform films are reproducible and two laboratories are now using practically the identical apparatus. Naturally refinement in the method is possible but we believe that in the absence of other methods of applying uniform films that this method will work very satisfactorily.

Lack of time does not permit further discussion on other work which is being carried out on wear resistance, water resistance, luster, etc. However, since the issuance of the last paper we have made certain refinements in the slip machine previously described.* The slip machine is now propelled by an electric motor turning over at 25 R.P.M. The shoe is propelled by a pusharm which moves at the rate of one inch per minute so that human experimental error has been eliminated. As soon as we obtained the method for determining the uniform thickness of film, we were able to reproduce under the same temperature conditions using the same wax coefficient of frictions which showed a variation of less than 1 per cent.

All of these tests have been run on Bakelite treated paper previously described. We were not able to obtain as close and reproducible results on linoleum which itself changes in characteristics with time and is not uniform within itself in running length.

The results described above show conclusively that there are testing methods embodying all the requisites of accurate laboratory testing procedure; 1, a method of assuring uniform measurement of nonvolatile solids, 2, uniform testing surface, 3, a method of uniform application. The use of these tools now opens the way to simple measurement of slip, lustre, wear, etc.

* *Soap and Sanitary Chemicals*, August, 1939.

High Rotenone Derris

Varieties of *Derris elliptica* grown in the Federated Malay States and in the Dutch East Indies are reported with a rotenone content as high as 13 per cent. The proportion of rotenone to total extractives in two samples from these sources was 43 and 42 per cent respectively. High-rotenone derris of British and Dutch origin has recently been imported into the United States. Howard A. Jones. J. Econ. Entomol. **32**, 344 (1939).

Mothproofing Agent

Dodecylaniline is methylated with dimethyl sulfate to give the quaternary compound dodecyldimethylaniline methylsulfate. The product is a waxy mass useful as a dispersing agent and for mothproofing furs, feathers, hair, etc. J. R. Geigy A.-G. Swiss Patent No. 200,669.

Moth Destroyer

An aminoaryl sulfone is prepared by treating 4-chlorophenyl hexadecyl sulfone with dimethyl amine and then treating the resulting 4-dimethylaminophenyl hexadecyl sulfone with dimethyl sulfate. The product is a substituted methyl sulfate of trimethyl-ammonium, a waxy mass suitable as a moth destroyer, fungicide and bactericide. J. R. Geigy A.-G. Swiss Patent No. 200,667.

Insect.-Disinfect. Meeting

(*From Page* 92)

on the mechanical evaluation of hand sprayers. As yet, the investigation has not reached its ultimate objective, i. e., to design or choose the most efficient sprayer for a particular purpose. However, by use of a specially designed machine, Dr. Campbell has been able to measure work done per stroke as an index of ease of operation and at the same time measure oil output per stroke. As a factor expressing mechanical efficiency, the "output factor" was calculated in terms of milligrams of oil delivered per foot-pound of work done. When the relation between design and mechanical performance of sprayers is thoroughly understood and complete data has been found for representative sprayers, Dr. Campbell expects to be in a position to study insecticidal performance more closely and thereby design or select sprayers best suited for particular purposes.

"Pyrethrum Insect Sprays, Prolonging Their Toxicity" was the title of an address given by Dr. R. B. Trusler, Davies-Young Soap Co., who told of his investigations relative to deterioration caused by oxidation of the active principals of pyrethrum dissolved in petroleum fly spray base. These investigations consisted primarily of the addition of certain antioxidants to sample sprays and after aging, determining the toxicity of these specimens to flies by the Peet-Grady Method. Some of the antioxidants used were eugenol, B-Naphthol, benzaldehyde, vanillin and olefinic compounds.

WHAT may prove to be a valuable aid to insecticide and disinfectant manufacturers was described by H. C. Fuller, technical consultant for the N.A.I.D.M., in a talk, "Preparation and Uses of an Allergy Reference Index." The Allergy Digest, has been compiled by Dr. Fuller as an aid to the Association in case any member firm becomes involved in litigation over alleged injuries incident to the use of its product. It is common knowledge, said Mr. Fuller, that certain individuals are allergic or hypersensitive to substances that are quite generally harmless under customary conditions to the majority of persons. Hence a survey is being made of medical literature in an effort to determine the extent to which certain articles of interest to the Association, could legitimately be held responsible for causing damage by external contact. Dr. Fuller also made other remarks concerning regulations and other matters incident to the enforcement of the Food, Drug and Cosmetic Act.

A. F. Matson, Underwriters' Laboratories, Inc., spoke on "Fire Hazards in Disinfectants and Insecticides" in which he told the association about the methods used in determining and classifying the fire hazards of those products. The testing and listing of insecticides and disinfectants are primarily for the purpose of providing fire insurance organizations and inspection authorities with a definite classification of the relative fire hazards of the product.

Melvin Fuld of Fuld Brothers, Baltimore, spoke on "Water Emulsion Floor Waxes." He told of further developments in the method of testing these waxes and said trat there are testing methods embodying all the requisites of accurate laboratory testing procedure, i. e., (1) a method of assuring uniform measurement of non-volatile solids, (2) uniform testing surface and (3) a method of uniform application. The use of these methods, Mr. Fuld said, now opens the way to simple measurement of slip, lustre, wear, etc.

"The Effect of Insecticide Bases on the Staining of Wall Paper," was presented by Dr. Werner R. Husen, Commerce Petroleum Co. Under certain conditions, he said, all wall paper types stain when subjected to the action of insectide bases and sprays, usually, the more moist the paper, the more pronounced the stain. Also, the stain intensity seems to be highest with the starch-type wall papers, then the protein-type and finally the rotogravure ink-type wall paper. At the conclusion of this paper, W. J. Zick, Stanco, Inc., stated that with all due respect to the fine paper presented by Dr. Husen, it might leave a false impression about insect sprays. He believed that wall paper staining under practical everyday conditions is negligible, and cited only one complaint received by his company over a period of years. He then called on others in the industry to report on their experiences and among those who responded were N. J. Gothard, Sinclair Refining Co.; H. W. Baldwin, Baldwin Laboratories, Inc.; R. L. Williams, Shell Oil Co.; C. R. Cleveland, Standard Oil of Indiana, and C. E. Smith of Socony-Vacuum, and Robert White, Jr., Robert C. White Co. All said that complaints of insect sprays staining wall paper were negligible.

C. L. Fardwell, McCormick & Co., reporting for the legislative committee stated that, comparatively speaking, there has been little legislative action since the Association's June convention, although the year 1939 was a "heavy" legislative year. The year 1940 is a short legislative year with legislatures of only eight states in regular session. They are Kentucky, Louisiana, Mississippi, Rhode Island, New Jersey, New York, South Carolina and Virginia. Mr. Fardwell was particularly concerned with the trend of unsound thinking on legislation as expressed in the many unsatisfactory bills and regulations the committee has had to oppose. Very objectionable and impracticable measures were offered last Spring in the legislatures of several states, he said, and it was only through the efforts of several of the Association's active members in these states that these bills were defeated.

Melvin Fuld, reporting for the Sanitary Supply Committee, made the recommendation that the incoming president appoint a scientific testing committee for water emulsion floor waxes. The disinfectant marketing committee, with W. B. Eddy, Rochester Germicide Co., as chairman, recommended that the association cooperate more closely with public health boards in an effort to show that there is a need for wider use of disinfectants in public places, particularly where drinking glasses are used, public toilets, public conveyances, etc.

Reporting for the disinfectant scientific committee, Dr. Klarmann stated that a tentative specification for foot bath fungicides has been drawn up.

The convention closed with a cocktail party and banquet the evening of December 5, held in the Garden of the Mayflower Hotel and following a game dinner, a 12-act floor show was put on. C. L. Lovell, American Can Co., was in charge of the entertainment.

Official Registration

Agricultural Laboratories, Inc.—M. M. Elmers
Allaire Woodward & Co.—Cady S. Corl, R. P. Neptun
American Can Co.—E. Walsh, T. E. Alwyn, C. L. Lovell, Louis A. Trevisan
Aromatic Products, Inc.—M. Lemmermeyer, C. L. Weston
Atlantic Refining Co.—H. R. Balentine, F. I. L. Lawrence
Baird & McGuire, Inc.—C. C. Baird, G. M. Baird, Jack Varley
Baldwin Laboratories, Inc.—H. W. Baldwin
Henry Barroll & Co., Inc.—J. N. Davies
Barrett Co.—Leon W. Miller, R. C. Quortrup
Boyce Thompson Institute—Albert Hartzell, Geo. F. McKenna
Breuer Electric Mfg. Co.—Adam A. Breuer
Brilco Laboratories Inc.—Rudolph Blick, Irving J. Rifkin
Capitol Chemical Co.—J. Douglas Rollow
Chemical Mfg. & Dust Co.—Carl E. Schaad, Fred J. Staph
Chemical Supply Co.—Henry A. Nelson
Clarkson Chemical Co.—J. H. Bender, A. H. Hollenback

Continental Can Co.—O. G. Jakob, L. J. LaCava, Edgar L. Sauters
Davies-Young Soap Co.—Dr. R. B. Trusler, R. H. Young
Derris, Inc.—R. F. Joyce, O. M. Poole, R. Wotherspoon
Dethol Mfg. Co. Inc.—Earl R. Ament
Dodge & Olcott Co.—R. W. Bush, W. F. Kroneman, R. B. Stoddard
C. B. Dolge Co.—Clarence Weirich
Dow Chemical Co.—W. W. Allen, Donald K. Ballman, Fred Fletcher, Alex M. Partansky, L. S. Roehm
E. I. du Pont de Nemours Co.—Geo. J. Tombak, A. B. Alvord, A. H. Goddin, S. J. Hill, A. S. Slack, F. W. Wolff
Federal Varnish Co.—M. J. Flanagan, John H. Lawson
Felton Chemical Co.—Hans Dresel
Frederick Disinfectant Co.—Fred Hoyt
Fritzsche Bros.—Warren R. Godfrey
Fuld Bros.—H. C. Brumbaugh, Melvin Fuld
Furst-McNess Co.—A. Rasmussen
General Laboratories—S. H. Crounse, Wm. A. Hadfield
Givaudan-Delawanna Inc.—Dr. William Gump, J. M. Bennett, Robert A. Engel, R. M. Stevenson
Gulf Oil Corporation—Mark Hill
Gulf Research & Development Co.—A. C. Miller, W. A. Simanton
Gulf Oil Corporation—Wallace Thomas
B. Heller & Co.—Preston B. Heller
Hercules Powder Co.—Fred Hogg, John B. Kennedy, Geo. C. O'Brien, Don Lott, Jr., Paul Mayfield, Frank Rapp, Friar M. Thompson Jr.
Dr. Hess & Clark, Inc.—Dr. Ray M. Batchedler
H. D. Huson Mfg. Co.—Paul F. Loris
Hunnewell Soap Co.—Leslie Webb Jr.
Huntington Laboratories Inc.—J. L. Brenn
Industrial Laboratories—Charles Mason
Kilgore Development Corp.—Jared H. Ford, Dr. Lowell B. Kilgore
Koppers Company—J. H. Carpenter, H. D. Cooper
Lambert Pharmacal Co.—Dr. G. F. Reddish
Lederer Bacteriological Labs.—Dr. Harold G. Lederer
Lehn & Fink Products Corp.—Dr. E. G. Klarmann
Lever Bros. Co.—C. N. Anderson
Magnus-Mabee-Reynard, Inc.—J. W. Felton, Jr., J. B. Magnus
MacNair-Dorland Co.—G. A. Dorland, Norman Jowitt, Ira P. MacNair
McConnon & Co.—James McConnon
McCormick & Co., Inc.—A. Edison Badertscher, John N. Curlett, C. L. Fardwell, Lester W. Jones, Charles P. McCormick
McLaughlin-Gormley-King Co.—John W. Purcell
Mellon Institute—Oscar F. Hedenburg
Merck & Co., Inc.—Peter Dougan
Midway Chemical Co.—L. D. Benedict, Jack T. Hohnstine, Walter Silbersack
Jas. Miller Son & Co.—E. DeWitt Osborne
Murphy Products Co.—F. E. Murphy
National Can Corporation—L. M. Blickman, W. R. Janney
Niagara Alkali Co.—W. S. Weed, S. W. Jacobs
Owens-Illinois Can Co.—Hugh Kelleher, F. W. Rosenbauer
Pease Laboratories, Inc.—Dr. H. D. Pease
S. B. Penick & Co.—D. C. Beach, Harold Noble, Albert B. Penick, Fred F. Rauch, J. V. Smith
Pittsburgh Coal Carbonization Co.—Caleb Davies, Jr., R. W. Mackensen
John Powell & Co.—W. J. Haude, David G. Hoyer, R. Peltz, John Powell, Chas. G. Campbell, Dr. Alfred Weed, Doug Rollow
R. J. Prentiss & Co. Inc.—R. A. Bevernick, H. R. King
Rex Research Corp.—H. W. Moburg
Reilly Tar & Chemical Co.—W. G. Hirschfeld, L. S. Garnham, W. K. Woodward
Rochester Germicide Co.—W. B. Eddy
Rohm & Haas Co.—Bernard Barton, C. J. Dumas, R. N. Lindabury, D. F. Murphy
The Selig Company—L. B. Joel, Simon S. Selig
Shell Oil Company—W. S. Thornhill, R. L. Williams
Shell Development Co.—M. L. Griffin
Sinclair Refining Co.—N. J. Gothard, A. G. Grady, F. O. Huckins
Skinner & Sherman Inc.—Burton G. Philbrick
Socony-Vacuum Oil Co., Inc.—Alan W. Morrison, C. E. Smith
L. Sonneborn Sons, Inc.—R. W. Bjork, Dr. Erich Meyer, F. J. Richter
Stanco Inc.—E. R. Littman, Franklin C. Nelson, F. J. Oertel, W. J. Zick
Standard Container, Inc.—G. S. King
Standard Oil Co. (Indiana)—C. R. Cleveland
Standard Oil Co. (Ohio)—R. O. Cowin
The Tanglefoot Company—Wm. J. Wagner
J. A. Tumbler Laboratories—Laurent J. LaBrie
United Cooperatives Inc.—A. B. Swearingen
U. S. Industrial Chemicals, Inc.—Marvin J. Rolstad
van Ameringen-Haebler, Inc.—A. L. van Ameringen
Vestal Chemical Co.—Wm. F. Pollnow
J. R. Watkins Company—Dr. E. G. Thomssen
West Disinfecting Co.—John A. Marcuse
Robert C. White Co.—Dr. Robert C. White, Robert C. White, Jr.
Whitmire Research Corp.—Joseph E. Burger, Dr. H. E. Whitmire
White Tar Co. of N. J.—H. W. Hamilton
Wilson & Bennett Mfg. Co.—E. T. Statler, John H. Wright
Wm. O. Buettner, Secretary, Nat'l Pest Control Assn.
Dr. F. L. Campbell, Ohio State Univ.
Hugh Craig, Oil, Paint & Drug Reporter
Dr. Alvin J. Cox, Chief, Bureau of Chemistry, Sacramento, Calif.
Captain Joseph Battley, War Department, Washington, D. C.
S. P. Eagleton, Public Buildings Administration
Henry C. Fuller, Technical Consultant, N.A.I.D.M.
John B. Gordon, Bureau of Raw Materials
Phillip P. Gott, U. S. Chamber of Commerce
Dr. Werner R. Husen, Commerce Petroleum Co.
A. F. Matson, Underwriters' Laboratories, Inc.
Paul Moore, Secretary, Crop Protection Institute
Dr. E. L. Newcomb, National Wholesale Druggists Association
Roger L. Pierpont, University of Delaware
Dr. L. A. Stearns, University of Delaware
Albert B. Heagy, Inspection and Regulatory Service, Maryland
F. B. Whittington, University of Maryland
Ray Schlotterer, New York Board of Trade
Warren N. Watson, Manufacturing Chemists Association
L. E. Bopst, Insecticide Regulatory Service, Maryland.

U. S. DEPT. OF AGRICULTURE

Samuel C. Billings, Beltsville, Md.
Chas. M. Brewer, Food & Drug Administration
Horace H. Custis, Chemist, Washington, D. C.
W. M. Davidson, Food and Drug Administration
J. J. T. Graham, Food & Drug Administration
E. L. Griffin, Food & Drug Administration
Lyle D. Goodhue, Bureau of Entomology & Plant Quarantine
H. L. Haller, Dept. of Agriculture
Lon H. Hawkins, Control Investigations, D. A.
Howard A. Jones, Bureau Entomology & Plant Quarantine
E. R. McGovran, Bureau of Entomology & Plant Quarantine
C. C. McDonnell, Chief, Food and Drug Administration
R. C. Roark, Insecticide Investigations, D. A.
Charles M. Smith, Dept. of Agriculture
Dr. Henry Welch, Food & Drug Administration
Richard O. White, Food and Drug Administration

U. S. DEPT. OF COMMERCE

C. C. Concannon, Chief, Chemical Division
John Wiseman, Chemical Division
E. A. Chapman, Chemical Division
F. W. Reynolds, National Bureau of Standards

News.....

Mystic Foam Enlarges

Mystic Foam Corp., sanitary supplies, Cleveland, has enlarged its plant at 6603 Carnegie Ave. to almost double its former capacity. The following representatives have recently been added to the Mystic Foam sales force: Dean G. Reitz, Dallas, Tex.; H. H. Barth, Boston; S. M. Morvay, Springfield, Mass.; Daughtery & Kruse, St. Louis, and Charles Koethen, Detroit.

Patrick J. Walsh Dies

Patrick J. Walsh, president of Phinotas Chemical Co., New York, died at his home in West New York, N. J., early last month following several months of illness. Mr. Walsh, who was 78 years old, became associated with the company in 1900 and had been president for the past ten years.

Forms New Chemical Co.

Russell G. Leonard Chemical Co., Lincroft, N. J., has recently been organized by Russel G. Leonard, of that city. He will manufacture a line of disinfectants, germicides, deodorants and cleansers for use in poultry houses, kennels and stables, as well as fly sprays. Two names which he has already adopted for his products are "Thoro Pine Disinfectant" and "Thoro Cleansing Crystals."

Hugo Koblenzer Dies

Hugo Koblenzer, officer of Standard Chemical Products Inc., and Standard Agricultural Chemicals Inc., Hoboken, N. J., died Dec. 2, at the Polyclinic Hospital, New York, after an illness of two weeks. He was 59 years old and had organized the New Brunswick Chemical Co., New Brunswick, N. J.

Ampion Personnel Notes

Ampion Corp., Long Island City, N. Y., recently formed by Leonard Schwarcz to manufacture soaps and sanitary chemicals for the jobbing trade, has announced several additions to the staff. Harry Dworsak, formerly with Cosmopolitan

Leonard Schwarcz

Chemical Co., Brooklyn, is head of Ampion's research department, A. D. Seidler, 176 Seaber St., Roxbury, Mass., is New England district manager and Leo D. Miller, formerly with West Disinfecting Co., Long Island City, and Metropolitan Refining Co., New York, is head of the sanitation chemicals department.

Nelson Heads Masonic Lodge

Henry A. Nelson, Chemical Supply Co., Cleveland, was recently installed as Worshipful Master of Forest Hill Lodge, No. 644, F. & A. M. at the East Cleveland Masonic Temple. Mr. Nelson is second vice-president of the National Association of Insecticide and Disinfectant Manufacturers, in which association he has been active for the past several years.

Moore Joins McLaughlin Co.

Dr. Joseph B. Moore, formerly entomologist with Washington State Experiment Station, has recently joined the research staff of McLaughlin Gormley King Co., Minneapolis. Dr. Moore, who was also, for several years, a member of the staff of the New York State Experiment Station, Geneva, will be stationed at Wenatchee, Wash., where he will be in charge of the company's research on codling moth and mite control.

Appoint Hercules Managers

Hercules Powder Co., Wilmington, Del., has recently appointed new managers to the company's San Francisco and Birmingham, Ala., offices. F. George Trescher has been named manager of the San Francisco office, after serving as assistant manager since March 1, 1939, and R. W. McKee has been named manager of the Birmingham office, having been assistant manager since Dec. 1, 1938.

Offer New Glass Specialty

American Products Co., Cincinnati, has just introduced a new product "Mystic" said to keep glass from frosting and misting. The product retards condensation on windshields, display windows, showcases and mirrors, it is said. It is also practical for those wearing glasses. "Mystic" is put up in red, white and blue lithographed round metal boxes, each of which is mounted in a self-selling four-color display card.

Clifton Opens Boston Office

A new branch office at 80 Federal Street, Boston, has just been opened by Clifton Chemical Co., New York, liquid soaps and sanitary supplies. Louis Norian is in charge. The phone number is Liberty 6498.

Nu-Life Cleaner Stipulation

Nu-Life Cleaner Manufacturing Co., Cleveland, has agreed to cease representing its "Nu-Life Rug and Upholstery Cleaner" as having sterilizing, germ destroying or moth-proofing properties, or that, when used as directed, it will completely de-moth upholstered furniture or that it will have any moth elimination effect other than to act as a contact killer.

S.O.C.M.A. Re-elects Merz

August Merz, Calco Chemical Co., Bound Brook, N. J., was re-

elected president of the Synthetic Organic Chemical Manufacturers Association at its annual meeting held at the Chemists Club, New York, early last month. Other officers elected were, E. H. Killheffer, E. I. du Pont de Nemours & Co., 1st vice-president; F. G. Zinsser, Zinsser & Co., 2nd vice-president, and Ralph E. Dorland, Dow Chemical Co., treasurer.

Killed By Ship Fumigant

Two members of the crew of the American Foreign Steamship Co. freighter *American Robin* were killed and twenty-four others were overcome early this month by hydrocyanic acid reported remaining after fumigation. The ship, moored in Jersey City, N. J., was fumigated by Frank Halim and Fred Oscar Halim, both of New York, and employed by General Exterminating Corp., Newark, N. J. The fumigators, charged with homicide, were reported to have sealed the hold against escaping fumes, but somehow fumes escaped into the crew's quarters.

Ambest Cleaner Co. Moves

Ambest Cleaner Co., manufacturers of "Ambest Cleaner," Detroit, has recently moved to new and larger quarters at 238 W. Jefferson Street.

Whitman Joins Agicide Labs.

R. C. Whitman, formerly of Monsanto Chemical Co., St. Louis, has joined the technical staff of Agicide Laboratories, Inc., insecticide concentrates, Milwaukee. Mr. Whitman, who has been active in the development of wetting agents and synthetic detergents, will represent the company as Eastern district manager.

New Waterproof Wax

Twi-Laq Chemical Co., Brooklyn, N. Y., has announced a new waterproof no-rubbing floor wax. The company states that the new product becomes not merely water-resistant, but completely water-proof immediately after drying, and that as soon as the wax is dry after application, water may be poured upon it and it may be damp mopped without affecting the film. They also state that when buffed, the new wax gives a non-skid finish. The firm is located at 222 Sullivan St., Brooklyn.

Antiseptics for Rubber Use

The development of two new compounds capable of making antiseptic such rubber articles as rubber surgical gloves, hospital sheeting, bath mats, etc., is reported by Robert Engel of Givaudan-Delawanna, Inc., New York, in an article "Modern Antiseptics for the Rubber Industry" in the December, 1939, issue of *The Rubber Age*. The new materials are called Compounds G-4, and G-11, and are described as diphenyl methane derivatives. They are said to be odorless, sufficiently non-toxic so as to be perfectly safe to use on rubber goods, while possessing three to six times the bactericidal strength of thymol. "There are many interesting possible applications in the rubber industry for the new materials," says Mr. Engel. "Already antiseptic dress shields, toys and baby pants are being marketed. Use is also indicated in such products as hospital sheeting, surgical tubing, rubber gloves, hot water bottles, nipples, adhesive plasters, rubber drain mats and sponges.

"Compound G-4," he reports, "has already been found effective as an 'athletes' foot' remedy in a 2 per cent aqueous solution in alcohol. This is interesting in connection with all types of shoe linings and possible application is already under investigation by some of the large shoe manufacturing concerns. The spores of the pathogenic fungi, causing athletes' foot, can be prevented from growing on a lining treated with a sufficient amount of Compound G-4. In rubber floor mats, such as used in locker rooms, this should be a particularly desirable feature. The preparation of these various compounds to render them dispersible in latex is now under investigation, for many latex compounds will require the added antiseptic feature too."

Form Smith-Miller Co.

William Smith, formerly Westchester County salesmanager for Ellis Davidson Co., New York, and Milton Miller, Miller Bros. Co., Port Chester, N. Y., have recently formed the Smith-Miller Co., also of Port Chester, which will deal in sanitary products.

Celebrate 50th Anniversary

J. L. Hopkins & Co., powdered soap and insecticide raw materials, New York, are celebrating their 50th year in business. The company, organized in 1890 by Jesse L. Hopkins, began business as an importer and distributor of crude and botanical drugs, occupying one floor of a narrow building at 14 Platt street, New York. In time, the company operated its own mill for grinding purposes and a steadily increasing business necessitated several moves to larger quarters. At present, the Hopkins company operates an extensive plant in the Williamsburg section of Brooklyn.

Penick Sales Convention

S. B. Penick & Co., insecticide, raw materials, New York, held a sales convention Dec. 13-16 in their New York offices at which all the company representatives in the United States attended. Harold Noble, manager of the insecticide division, spoke on the outlook in the insecticide market for the coming year.

Comments on Shellac

(*From Page* 109)

give manufacturers and prospective manufacturers practicable information on recipes and processes which they can put to actual commercial use, it has occurred to us that many of your readers would appreciate fuller information on the advantageous uses of shellac in polishes of this sort. We should be glad to supply such technical information direct to any manufacturer who will address the American Bleached Shellac Manufacturers Association, 70 Pine St., New York, N. Y."

Non-alcoholic Iodine

Davis Emergency Equipment Co., New York, is producing a non-alcoholic solution of iodine, which, it is claimed by the manufacturer, is superior in many respects to the alcoholic tincture of iodine. The preparation known as "Isodine-Davis" is said to have the same antiseptic properties as the tincture of iodine but it is less painful when applied, does not burn or destroy the tissues, and penetrates more deeply.

War Increases Naphthenate Use

There is a great demand in Great Britain for copper naphthenate for rot-proofing sandbags, according to *Soap's* correspondent in London, and dry cleaners able to impregnate large quantities of gunny bags are being swamped with orders from government departments as well as private concerns. After treatment with copper naphthenate, which is a valuable fungicide, the bags are said to contain the equivalent of 0.5 per cent metallic copper in the fibres.

Set PCO Convention Date

The eighth annual convention of the National Pest Control Association will be held October 28, 29 and 30, 1940, at the Hotel Claypool, Indianapolis. Convention committees have been appointed and work for the 1940 convention is already under way. Lawrence A. McKenna will act as general chairman of the national committee, with Edward H. Arnott directing the activities of the Indianapolis committee. E. E. Edwards will have charge of booth exhibits and program, Charles O. Partlow of entertainment, J. J. Davis of publicity, Maurice Bailie of attendance and registration, George Spelios of reception committee, Mrs. E. H. Arnott, ladies' committee, and Martin Meyer, travel and transportation.

Sulfamates As Weed Killers

Experiments in weed killing with sulfamic acid and certain of its salts have recently been reported by Grasselli Chemicals Department of E. I. du Pont de Nemours & Co., Wilmington, Del. The experiments, carried on by agriculture experiment stations and individual investigators, gave encouraging results, according to the Grasselli company, who also said there is no indication that sulfamates, when used as weed killers, are poisonous to farm animals.

U. S. Pyrethrum Imports

Imports of pyrethrum into the United States during the first ten months of 1939 totaled 8,710,190 lbs. valued at $1,984,906. This compares with total imports of 11,294,799 lbs. valued at $1,914,157 for the corresponding period of 1938.

Syracuse Chemical Moves

Syracuse Chemical Co., exterminators and fumigators, Syracuse, N. Y., recently moved to new and larger quarters at 558 Clarendon Street.

Verse and Verse

Gail-Marjorie Redheffer, of the sales department of Crystal Soap & Chemical Co., Philadelphia, addresses a poetic suggestion to the editor of *Soap*, asking for more articles on sales problems. We will see that she is answered, although we cannot guarantee that our reply will be in verse. Perhaps it is just as well.

—Ed.

In SOAP I read of this and that
Of wetting agents and of fat,
Of nickel copper catalyst.
And while I am no egotist,
I wonder why the salesman gets
No mention 'cept in epithets!

Each salesman has a formula
To win approval or faux pas.
Some are better than the rest
And so I make this small request.
A meager column as an aid
To tell the rest how sales are made.

How they filter buyer's "No"
To leave a fat contract or so.
For melting point of sales
resistance,
Turn on the heat at proper
distance,
For if the soap is bead or chip,
All of us can use a tip,
And so I'll sign off in the hope
We'll read of salesman, next in
SOAP.

Gail-Marjorie Redheffer.

National Wax Leases Quarters

National Wax Co., Chicago, has leased a four-story building at 1300-1312 West Division St., that city and planned to take possession early in January. The move gives them 60,000 square feet of floor space or triple that in their former location at 936 West Chicago Ave., according to E. C. Ennis, general manager. Direct access to railroad switching facilities will also be available.

Wants Blue Ribbon Mophead

A reader of SOAP has asked to be supplied with the name of the manufacturer of the "Blue Ribbon" mophead. If one of our readers has the necessary information, SOAP would appreciate hearing from him.

Sanitary Products Co. Moves

State Sanitary Products Co., sanitary supplies, New York, has moved to new quarters at 630 9th Avenue.

Coast P.C.O. Convention

The sixth annual convention sponsored by the Calfornia Pest Control Association will be held at the Roosevelt Hotel, Hollywood, on January 15, 16 and 17, 1940. The theme of the convention will be "Practical Methods of Insect and Pest Control for Pest Control Operators." Short lectures by specialists will introduce the subjects, and will be followed by open forum discussions of practical methods of control.

Insect-catching Adhesives

A mineral oil is mixed with a pasty or solid product obtained by polymerizing an unsaturated compound containing only one olefinic linkage. Polymerization products of propylene, butylene, isobutylene and vinayl ethyl ether are suitable. Waxy substances may be added to the mixture. I. G. Farbenind. A.-G. German Patent No. 677,440.

Milrox Chem. Labs Move

Milrox Chemical Laboratories, Inc., Chicago, have moved to newer quarters at 549 W. Randolph Street.

Disinfectant at Stock Show

Chicago's International Live Stock Exposition last month called for a disinfecting job of unusual proportions. On arrival at the show each of the more than 13,300 cattle, hogs, sheep and horses entered by exhibitors had to be sprayed and the job repeated at frequent intervals during the eight-day exhibition. Inside the huge exposition building another spraying schedule was maintained by crews numbering fifteen men on duty day and night. Twenty acres of floor space occupied by exhibition pens were sprayed repeatedly every day, while walls, pillars and other structural timbers in and around pens and stables were treated every twenty-four hours. The show ring and 15,000 seats around the arena also were given attention.

The job was directed by John J. Russo, superintendent of the International Amphitheatre who used "B-K" disinfectant of which several hundred gallons were consumed daily. Spray guns with tanks of 100 gallons capacity were utilized. To keep the half million show visitors clean about fifty gallons of liquid soap were used in wash rooms. Large quantities of liquid soap were also supplied to exhibitors for scrubbing their prize animals in preparation for the judging and prior to each parade in the arena.

New Wax Emulsion Polish

Franklin Research Co., Philadelphia, has recently announced a new wax emulsion polish for fine finishes to be known as "Rubber Gloss" furniture polish. It is said to give a hard, protective wax film that will not oxidize, show finger marks or gather dust.

MGK Name Sales Agent

McLaughlin Gormley King Co., manufacturing chemists, Minneapolis, recently announced that "Ever Green," a non-poisonous garden spray developed by them, will be sold exclusively by Acme White Lead and Color Works, Detroit, who have a full line of agriculture package insecticides. There will be no increase in the price of the product for the year 1940, and a heavy national advertising schedule will be used. The McLaughlin Gormley King company will continue to sell its other products, "Multicide," "Selocide" and "Pyrocide Dust."

Leaves Chipman Chem. Co.

Ralph N. Chipman recently resigned as president of the Chipman Chemical Co., agricultural insecticides, Bound Brook, N. J., after having founded the company twenty-two years ago. Mr. Chipman, in relinquishing his interests in the company to his associates, stated that no other changes in the management or character of the company were anticipated.

Fight Deer With Insecticide

Farmers in Colorado county, Texas, are reported turning to the use of insecticides to protect their crops from wild deer. Sulfur dust is spread on vegetation along the borders of fields. Burlap bags soaked in carbolineum are also hung in convenient places and the combination is said to be producing results in discouraging the forays of this unusual pest.

Bull Medicine Co. Moves

W. H. Bull Medicine Co., insecticides, St. Louis, recently moved to new and larger quarters at 1950 North 11th Street.

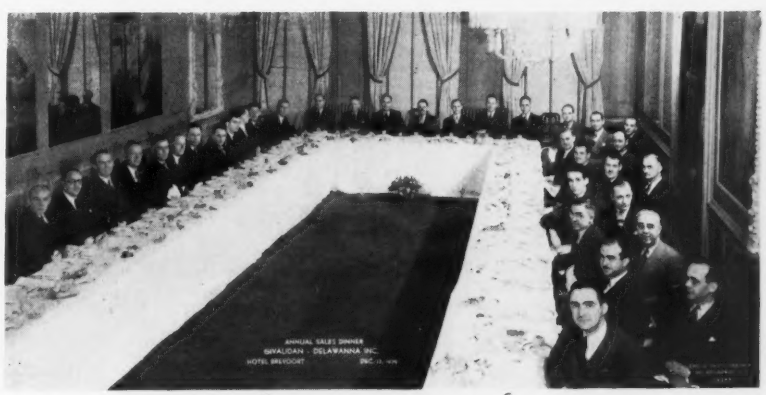
Loss of Insecticide Dusts

A study conducted by S. F. Potts, New Haven, Bureau of Entomology and Plant Quarantine, of the action of dust particles falling on plant leaves and needles, showed that in growth of medium density only from 10 to 26 per cent of the dust applied actually settled on the foliage, as compared with a deposit of from 38 to 60 per cent in ordinary spray mixtures. Furthermore, under average conditions, air movement after dust application removed approximately 50 per cent of the initial deposit. The loss by wind was greatest at the tops of the trees. In the 11 different insecticides investigated in dust form, from 2 to 26 per cent (averaging 15 per cent) of the initial deposit remained after 1 inch of rain. Although materials which greatly increased their initial deposit and adherence were added to these dusts, the investigations showed that more efficient methods of application are needed than those now in general use.—*The Extension Entomologist.*

New Self Polishing Waxes

Foster D. Snell, Inc., chemists and engineers, Brooklyn, recently announced a new non-rub floor wax similar in gloss and other properties to the usual grades of these waxes without the use of branded specialty ingredients, or more than a minimum amount of carnauba wax.

Changes in the perfuming materials outlook brought about by the present European situation were discussed exhaustively at the annual sales meeting of Givaudan-Delawanna, Inc., held December 12 to 14 at the New York offices. Sessions were presided over by R. M. Stevenson, sales manager, and representatives from all over the country attended. Convention dinner pictured below.



To Hold 4th PCO Conference at Purdue University Jan. 15-19

THE Fourth Annual Conference for Pest Control Operators is to be held at Purdue University, Lafayette, Ind., January 15-19. As in past years Prof. J. J. Davis will have general charge of arrangements for the conference and will again have the cooperation of the National Pest Control Association. The registration fee will be $4.00 which will include admission to the banquet the evening of January 18th. Reservations for the conference should be addressed to Prof. Davis at Lafayette as early as possible so that arrangements may be made for living accommodations. The group will see a basketball game between the Purdue and Minnesota teams the evening of January 15th. Tickets are $1.00 each and reservations must be made in advance. The full program for the conference sessions follows:

Monday, 8:00—12:00 A.M. Registration, Agricultural Building, Room 102

Monday, 9:00—12:00 A.M. Agricultural Building, Assembly Room
The Structures of Insects: Their Use in Identifying and Controlling Insects—G. E. Lehker
The Life and Habits of Insects: How They Relate to Control Operations—H. O. Deay
Welcome—Dean R. J. Reed

Monday, 1:30—4:30 P.M. Agricultural Building, Assembly Room
Principles of Insect Control—J. J. Davis
Chemical and Physical Properties of Insecticides—D. H. Sieling
The Botanical Insecticides in Household Insect Control—C. S. Corl
The Development of Synthetics as Insecticidal Principles—C. Kampmeier, C. J. Dumas

Tuesday, 9:00—12:00 A.M. Agricultural Building
The Reaction of Rats to Specific Poisons—A. Demonstration—C. R. Sturtevant
The Chemistry of Arsenical Soil Insecticides—Geo. L. Hockenyos
Cockroaches: Biological Studies and Sources of Infestation—G. E. Gould
Practical Control Procedures—Chester Schwimmer
Recent Studies on the Mechanical Performance of Hand Sprayers—F. L. Campbell
The Brown Dog Tick—J. J. Davis

Tuesday, 12:00 Noon. Group Pictures. Agricultural Building

Tuesday, 1:30—4:30. Meet in Assembly Room, Agricultural Building
Termite Field Trip

Tuesday, 7:30 P.M. Union Building
Termite Pictures—Discussion of Termite Field Trips

Wednesday, 9:00—12:00 A.M. Agricultural Building, Assembly Room
Clothes Moths with Special Reference to Sources of Infestation—E. A. Back
Moth Control and Moth-Proofing—H. B. Jordan
Carpet Beetles: Their Identification, Habits, and Sources of Infestation—E. A. Back
Their Control—H. E. Jennings

Wednesday, 1:30—4:30 P.M. Agricultural Building, Assembly Room
Fumigation: Federal Housing Project Fumigations—William O. Buettner, Max J. Levy
Industrial Fumigation Opportunities for the Pest Control Operator—I. L. Ressler
Case Histories as Related to Fumigation Procedures—J. L. Horsfall

Wednesday, 7:30 P.M. Union Building
Visualized Pest Control

Thursday, 9:00—12:00 P.M. Agricultural Building, Room 201
Classification and Identification of Insects, with Special Reference to Those Occurring in Homes—H. O. Deay

Thursday, 1:30—4:30 P. M. Agricultural Building, Room 201
Ants: Identification of Ants—R. L. Morris
Sources of Infestation and Control—W. E. McCauley
Beetles Attacking Structural Timbers—B. E. Montgomery
Identification of Woods—O. M. Davenport

Thursday, 6:30 P.M. Union Building Ball Room
Banquet—President Edward C. Elliott, Toastmaster

Friday, 9:00—12:00 P.M. Agricultural Building, Assembly Room
The Reaction of Rats to Specific Poisons—C. R. Sturtevant
Sources of Rat Poisons and Methods of Determining Toxicity—J. C. Ward
The City-Wide Rat Control Campaign—G. C. Oderkirk
House Mice and Their Control—H. K. Steckel
Recent Research Developments and Needs in Rat and Mouse Control—J. C. Ward

Friday, 1:30—4:30 P.M. Agricultural Building, Assembly Hall
Panel Discussion on Other Problems Confronting the Pest Control Operator—W. P. Flint, Robt. E. Yeager, E. A. Back and W. E. McCauley
A Summary of the Conference—J. J. Davis

—— ♦ ——

Exhibit at Gardeners' Show

Advantages of chloropicrin or "tear gas" for soil fumigation by truck gardeners and florists were outlined by Professor Frank L. Howard, Kingston, R. I., in an address at the 31st annual convention of the Vegetable Growers Association of America in Chicago, Dec. 4 to 7. Professor Howard, who is plant pathologist at the Rhode Island Agricultural Experiment Station, reported on an investigation into the use of chloropicrin which he has conducted for three years at the station's greenhouses. Further presentation of chloropicrin was made in the convention trade show by Innis, Speiden & Co., New York, who had a display of their "Larvacide" for soil fumigation and their "Larvajector" for its application. C. C. Johnson of Innis, Speiden's New York sales office directed the commercial demonstration, assisted by A. E. Lundquist of the company's Chicago office.

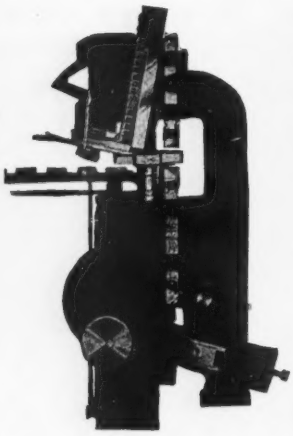
Tobacco By-Products & Chemical Corp., Louisville, had a display of their "Black Leaf 40" nicotine insecticide and also demonstrated their new "Nico-Fume" pressure fumigator for hand-directed fumigation. H. J. Wood, the company's New York representative, was in charge. General Chemical Co., New York, sent to the meeting a display of their "Orchard Brand" line of arsenical and non-arsenical insecticides, copper and sulfur fungicides and other products. R. G. Farnsworth, Cleveland, O., and Vern H. Orum, St. Louis, supervised the demonstration. Franklin Research Co. had a display of wax emulsions for vegetables with J. T. Kangs of Philadelphia headquarters in charge.

—— ♦ ——

Unico Products Moves

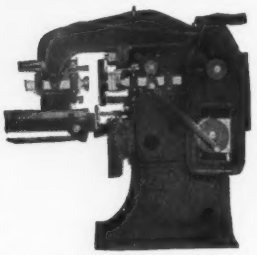
Unico Products Corp., janitors supplies, New York, has moved to new and larger quarters at 510 Hudson Street.

Special Offerings of SOAP MACHINERY *Completely Rebuilt!*

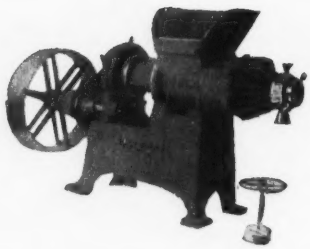


Small size fully automatic Jones toilet soap press. Capacity 150 to 200 small cakes per minute. A real buy at an attractively low price. Has been completely rebuilt in our own shops.

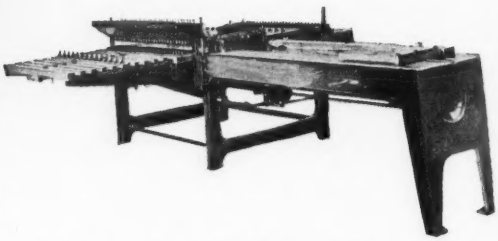
H-A SOAP MILL
This 4-roll granite toilet soap mill is in A-1 shape. Latest and largest size rolls.



4 JONES AUTOMATIC combination laundry and toilet soap presses. All complete and in perfect condition.



Single screw soap plodders with 6, 8, 10 or 12 inch screws. All completely rebuilt and unconditionally guaranteed.



2 Automatic Power Soap Cutting Tables.

INVESTIGATE THESE SPECIAL BARGAINS

•

Johnson Automatic Soap Chip Filling, Weighing and Sealing Machines for 2 lb. and 5 lb. Packages guaranteed in perfect condition.

•

ADDITIONAL REBUILT SOAP MACHINERY

All used equipment rebuilt in our own shops and guaranteed first class condition.

- H-A, 1500, 3000, 4000, 5000 lbs. capacity. Steam Jacketed Crutchers.
- Dopp Steam Jacketed Crutchers, 1000, 1200, 1500 lbs. and 800 gals. capacity.
- Ralston Automatic Soap Presses.
- Scouring Soap Presses.
- Empire State, Dopp & Crosby Foot Presses.
- 2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.
- H-A 4 and 5 roll Steel Mills.
- H-A Automatic and Hand-Power slabbers.
- Proctor & Schwartz Bar Soap Dryers.
- Blanchard No. 10-A and No. 14 Soap Powder Mills.
- J. H. Day Jaw Soap Crusher.
- H-A 6, 8 and 10 inch Single Screw Plodders.
- Allbright-Nell 10 inch Plodders.
- Filling and Weighing Machine for Flakes, Powders, etc.
- Steel Soap frames, all sizes.
- Steam Jacketed Soap Remelters.
- Automatic Soap Wrapping Machines.
- Glycerin Evaporators, Pumps.
- Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch.
- Perrin 18 inch Filter Press with Jacketed Plates.
- Gedge-Gray Mixers, 25 to 6000 lbs. capacity, with and without Sifter Tops.
- Day Grinding and Sifting Machinery.
- Schultz-O'Neill Mills.
- Day Pony Mixers.
- Gardiner Sifter and Mixer.
- Proctor & Schwartz large roll Soap Chip Dryers complete.
- Doll Steam Jacketed Soap Crutchers, 1000, 1200 and 1350 lbs. capacity.
- Day Talcum Powder Mixers.
- All types and sizes—Tanks and Kettles.
- Ralston and H-A Automatic Cutting Tables.
- Soap Dies for Foot and Automatic Presses.
- Broughton Soap Powder Mixers.
- Williams Crutcher and Pulverizer.
- National Filling and Weighing Machines.

Send us a list of your surplus equipment—
we buy separate units or complete plants.

NEWMAN TALLOW & SOAP MACHINERY COMPANY

1051 WEST 35th STREET, CHICAGO — Phone Yards 3665-3666

Our Forty Years Soap Experience Can Help Solve Your Problems

Classified Advertising

Classified Advertising—All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap*, 254 West 31st St., New York.

Positions Wanted

Chemist—expert on polishes, executive background, formulating, manufacturing and packaging polishes, emulsions, auto and furniture, paste and self-polishing waxes, insecticides, have excellent formulae and private label prospects royalty basis or good position. Address Box No. 728, care *Soap*.

Soapmaker—with 7 years' experience in Austria and South America in the manufacture of soap and cosmetic products, can assist chemist. Address Box No. 726, care *Soap*.

Sales Executive—Chemicals and allied products, 38 years old, married, 19 years' experience, two major companies. Proved record merchandiser and sales executive. Broad experience in handling people, organization details, production guidance, correspondence, distribution and sales. Address Box No. 733, care *Soap*.

Chemist, Ph.D.; many years practical experience in soaps, oils, fats, cosmetics, textile chemicals, etc., desires suitable connection. Address Box No. 716, care of *Soap*.

Soapmaker, Chemist, Perfumer—long time in laundry and toilet soaps; glycerine production; improve plants, processes, etc. Correspondence English or Spanish. Address Box No. 717, care of *Soap*.

Insect Specialist: Cornell entomology graduate, desires connection with insecticide firm. Useful rearing insects, making tests. Address Box No. 719, care of *Soap*.

Positions Open

Salesman—Man with experience to sell janitor and maintenance supplies to the large consumers. Salary and commission. Address Box No. 734, care *Soap*.

Wanted—To get in touch with a chemist having a thorough knowledge of the manufacture of water emulsion waxes. Address Box No. 730, care *Soap*.

Salesman Wanted to cover entire country selling a complete line of soaps, disinfectants, waxes, cleansers, etc. for old established firm. Good income assured. Substantial salary to start. Address Box No. 740, care *Soap.*

New York importer and manufacturer of essential oils, aromatic chemicals, flavors and perfume bases has some good territory open to experienced representatives. Write with full details. Address Box No. 727, care *Soap.*

Wanted—Jobbers or Salesmen of Laundry Supplies, to handle well-known Laundry Sour. Liberal discount or commission given, with technical help and full cooperation. Address Box No. 729, care *Soap.*

Miscellaneous

Factories installed or remodeled. Instruction profitable laundry and toilet processes and preparations, perfumes, glycerine recovery analyses. Address English or Spanish. Box No. 735, care *Soap.*

Partnership—Experienced chemist in the manufacture of polishes, sanitary and cosmetic products, wants to invest money in a sound business. Address Box No. 725, care *Soap.*

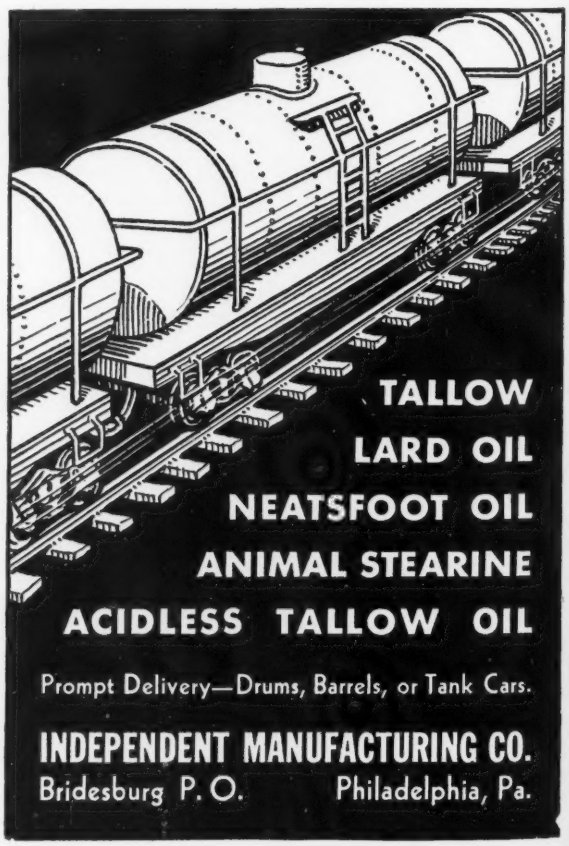
Want to Buy—Flit type pint and quart cans. Plain or printed. State price and quantity. Address Box No. 731, care of *Soap.*

Oranges and Grapefruit. New Crop Tree Ripened Fruit. Fifty pound box $3.88 express prepaid. Let us send a box to your friend under your name. Georgia's Finest Paper shell PECANS 25c pound delivered. Shelled PECANS five pounds $3.75. Address Nichols and Co., Kingston, Ga.

Wanted for User: Soap chip dryer; filter press; foot and automatic soap press; crutcher; plodder; milling roll; dry powder mixers. What have you. Address Box No. 732, care of *Soap.*

Floor Brushes—We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

Liquidation from Soap Plant—Houchin 5-roll steel mill; 4-roll stone mill; Jones automatic soap press; foot presses; Proctor soap dryer; Package Machinery Co. automatic wrapping machines; Johnson carton sealers; automatic powder fillers; crutchers; plodders; 6 knife chippers; cutting tables; frames; filter presses; mixers; boiling kettles, etc. Send for Liquidation Bulletin No. 402. Stein Equipment Corp., 426 Broome St., New York City.



Raw Materials and Equipment

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, on page 142 for page numbers. *"Say you saw it in SOAP."*

ALKALIES

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
Eastern Industries
Hooker Electrochemical Co.
Innis, Speiden & Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

BULK AND PRIVATE BRAND PRODUCTS

Ampion Corporation (Sanitary Supplies)
Associated Chemists, Inc. (Insecticides)
Baird & McGuire, Inc. (Disinfectants)
Buckingham Wax Corp. (Wax Products)
Candy & Co. (Floor Products)
Chemical Supply Co. (Disinfectants, etc.)
Clifton Chemical Co. (Sanitary Supplies)
Cole Chemical Corp. (Sanitary Supplies)
Davies-Young Soap Co. (Potash Soaps)
Empire Chem. Prods. Co. (Sanitary Supplies)
Federal Varnish Co. (Floor Products)
Fuld Bros. (Sanitary Supplies)
James Good, Inc. (Sanitary Supplies)
Harley Soap Co. (Soap Specialties)
Higley Chemical Co. (Floor Seal)
Hockwald Chemical Co. (Sanitary Supplies)
Hysan Products Co. (Sanitary Supplies)
Koppers Co. (Disinfectants)
Kranich Soap Co. (Potash Soaps)
Onalim Co. (Shampoos)
John Opitz, Inc. (Insecticides)
Peck's Products Co. (Sanitary Supplies)
Philadelphia Quartz Co. (Detergents)
Reilly Tar & Chem. Co. (Floor Seals)
Geo. A. Schmidt & Co. (Soaps)
Superior Soap Corp. (Soaps and Waxes)
Sweeping Compound Mfrs. Co. (Sweeping Compound)
Twin City Shellac Co. (Wax Products)
Uncle Sam Chemical Co. (Sanitary Supplies)
T. F. Washburn Co. (Floor Products)
White Tar Co. (Disinfectants, etc.)
Windsor Wax Co. (Wax Products)

CHEMICALS

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Eastern Industries
General Chemical Co.
Hooker Electrochemical Co.
Industrial Chemical Sales Div.
Innis, Speiden & Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Reilly Tar & Chemical Corp.
Solvay Sales Corp.
Standard Silicate Co.
Jos. Turner & Co.
Victor Chemical Works
Warner Chemical Co.
Welch, Holme & Clark Co.

COAL TAR RAW MATERIALS

(Cresylic Acid, Tar Acid Oil, etc.)

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
Baird & McGuire, Inc.
Barrett Co.
Innis, Speiden & Co.
Koppers Co.
Monsanto Chemical Co.
Reilly Tar & Chemical Co.
White Tar Co.

COLORS

Fezandie & Sperrle
Pylam Products Co.

CONTAINERS AND CLOSURES

American Can Co. (Tin Cans and Steel Pails)
Anchor-Hocking Glass Corp. (Closures and Bottles)
Continental Can Co. (Tin Cans)
National Can Co. (Cans)
Owens-Illinois Glass Co. (Bottles and Closures)
Williams Sealing Corp. (Closures)
Wilson & Bennett Mfg. Co. (Steel Pails and Drums)

DEODORIZING BLOCK HOLDERS

Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.
Hysan Products Co.

INSECTICIDES, SYNTHETIC

American Cyanamid & Chemical Corp.
Associated Chemists, Inc.
Rohm & Haas Co.
U. S. Industrial Chemical Co.
Whitmire Research Corp.

MACHINERY

Anthony J. Fries (Soap Dies)
Houchin Machinery Co. (Soap Machinery)
Huber Machine Co. (Soap Machinery)
R. A. Jones & Co. (Automatic Soap Presses and Cartoning Machinery)
Karl Kiefer Machine Co. (Filling Machinery)
Koppers Company (Coal Tar Plants, Power Plants, Valves, Castings, Pipe, Tanks)
Mixing Equipment Co. (Tanks, Mixers)
Proctor & Schwartz (Dryers)
C. G. Sargent's Sons Corp. (Dryers)
Sprout, Waldron & Co. (Mixing, Conveying, etc.)
Stokes & Smith Co. (Pkg. Machy.)

Raw Material and Equipment Guide

NOTE: This is a classified list of the companies whichadvertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, on page 142 for page numbers. *"Say you saw it in SOAP."*

MACHINERY, USED

Consolidated Products Co.
Newman Tallow & Soap Machinery Co.

MISCELLANEOUS

American Standard Mfg. Co. (Wax Applicator)
Anchor-Hocking Glass Corp. (Metal Caps)
Barnsdall Tripoli Co. (Pumice—Tripoli)
Dow Chemical Co. (Germicides, Agricultural Insecticides, Fumigants)
Filtrol Corp. (Purifying and Decolorizing Clay)
General Petroleum Corp. (Naphthenic Acids)
Hercules Powder Co. (Pine Oil and Rosin)
Industrial Chemical Sales Div. (Decol. carbon, Chalk)
Innis, Speiden & Co. (Fumigants)
Koppers Company (Coal, Coke, Roofing Materials)
Lenape Trading Co. (Waxes)
Michel Export Co. (Synthetic Detergents)
Pennsylvania Refining Co. (White Oils)
Pylam Products Co. (Lathering Agent)
Reilly Tar & Chem. Co. (Preservatives)
Socony-Vacuum Oil Co. (Naphthenic Acids)
U. S. Industrial Alcohol Co. (Alcohol)
U. S. Industrial Chemical Co. (Solvents)

OILS, FATS, AND FATTY ACIDS

T. G. Cooper & Co.
Eastern Industries
Independent Mfg. Co.
Industrial Chemical Sales Div.
Leghorn Trading Co.
Newman Tallow & Soap Machinery Co.
Orbis Products Corp. (Stearic Acid)
Wecoline Products Co.
Welch, Holme & Clark Co.

PARADICHLORBENZENE

John A. Chew, Inc.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Hooker Electrochemical Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.

PERFUMING MATERIALS

American-British Chemical Supplies
Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
Dow Chemical Co.
P. R. Dreyer Inc.
E. I. Du Pont de Nemours & Co.
Felton Chemical Corp.
Firmenich & Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
Magnus, Mabee & Reynard, Inc.
Monsanto Chemical Co.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Rifa—New York, Inc.
Ungerer & Co.
Van Ameringen-Haebler, Inc.
Albert Verley, Inc.

PETROLEUM PRODUCTS

Deodorized Insecticide Base, White Oils, Petroleum, Paraffine Oils, Residues, etc.)

Atlantic Refining Co.
Pennsylvania Refining Co.
L. Sonneborn Sons

PHOSPHATES

Trisodium, Sodium Pyrophosphate, etc.

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
E. I. du Pont de Nemours & Co.
General Chemical Co.
Monsanto Chemical Works
Victor Chemical Works
Warner Chemical Co.

PYRETHRUM AND DERRIS PRODUCTS

Insect Flowers and Powder, Pyrethrum Extract, Derris Products

Associated Chemists, Inc.
Derris, Inc.
S. B. Penick & Co.
R. J. Prentiss & Co.
McCormick & Co.
McLaughlin, Gormley, King Co.
John Powell & Co.
Whitmire Research Corp.

SILICATES

E. I. du Pont de Nemours & Co.
General Chemical Co.
Philadelphia Quartz Co.
Standard Silicate Co.

SOAP DISPENSERS

Ampion Corp.
Bobrick Mfg. Co.
Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.
Hockwald Chemical Co.

SPRAYERS

Breuer Electric Mfg. Co. (Electric)
Fumeral Co. (Spraying Systems)

WAXES AND GUMS

Carnauba, Shellac, Candelilla, etc.

American Cyanamid & Chem. Corp.
T. G. Cooper & Co.
Innis, Speiden & Co. (Waxes)
Lenape Trading Co.
Mantrose Corp. (Shellac)
Twin City Shellac Co. (Shellac)

Professional Directory

Skinner & Sherman, Inc.

246 Stuart Street, Boston, Mass.

Bacteriologists and Chemists

Disinfectants tested for germicidal value or phenol coefficient by any of the recognized methods.

Research—Analyses—Tests

H. A. SEIL, Ph.D. E. B. PUTT, Ph.C., B.Sc.

SEIL, PUTT & RUSBY, INC.

Analytical and Consulting Chemists

Specialists in the Analysis of Pyrethrum Flowers, Derris Root, Barbasco, or Cube Root—Their Concentrates and Finished Preparations

ESSENTIAL OILS SOAP

16 East 34th Street, New York, N. Y.

STILLWELL AND GLADDING, Inc.

Analytical and Consulting Chemists

Members Association of
Consulting Chemists and Chemical Engineers

130 Cedar Street New York City

SOAPS — DETERGENTS

Analyses Development
Consultation Formulas

Hochstadter Laboratories
INCORPORATED

254 West 31st St. New York City

KILLING

strength of Insecticides

by PEET GRADY METHOD

PYRETHRINS in PYRETHRUM FLOWERS
(by Gnadinger or Seil Method)

We raised and killed more than 1 million flies in the last 2 years

ILLINOIS CHEMICAL LABORATORIES, INC.
5235 WEST 65th STREET CHICAGO, ILL.

Charles S. Glickman

Consulting Chemist

SPECIALIZING IN

Research—Analyses—Formulae—Plant Design
for
Waxes—Polishes—Soaps—Cosmetics & Leather Finishes, etc.

220 BROADWAY, NEW YORK
COrtland 7-3382

FOSTER D. SNELL, INC.

Chemists—Engineers

Every form of Chemical Service

305 WASHINGTON STREET BROOKLYN, N. Y.

Patents—Trade Marks

All cases submitted given personal attention
Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorneys' Fees"—Free

Lancaster, Allwine & Rommel
PATENT LAW OFFICES

Suite 402, Bowen Building Washington, D. C.

ALAN PORTER LEE, Inc.

Contracting and Consulting Engineers

Design and Construction of Equipment and Plants for Producing and Processing Fats, Oils, Soaps and Related Products

136 LIBERTY STREET, NEW YORK, N. Y.

Cable Address: "ALPORTLE", New York

The New

1940 BLUE BOOK

to be mailed to subscribers to SOAP AND SANITARY CHEMICALS March 1, will carry the revised text of a whole series of official specifications and testing methods for soaps, insecticides, disinfectants, etc.

The Blue Book is free with a $3.00 subscription to Soap

MAC NAIR-DORLAND CO.

Publishers

254 W. 31st Street New York, N. Y.

CONSULTANTS

offering their services to manufacturers of soaps and sanitary specialties should apprise the industry of their facilities through this professional card department. SOAP reaches 4,000 firms needing help of a professional nature.

Index to Advertisers

For product classification see pages **139** *and* **140**

* For further details see announcement in 1939 SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.

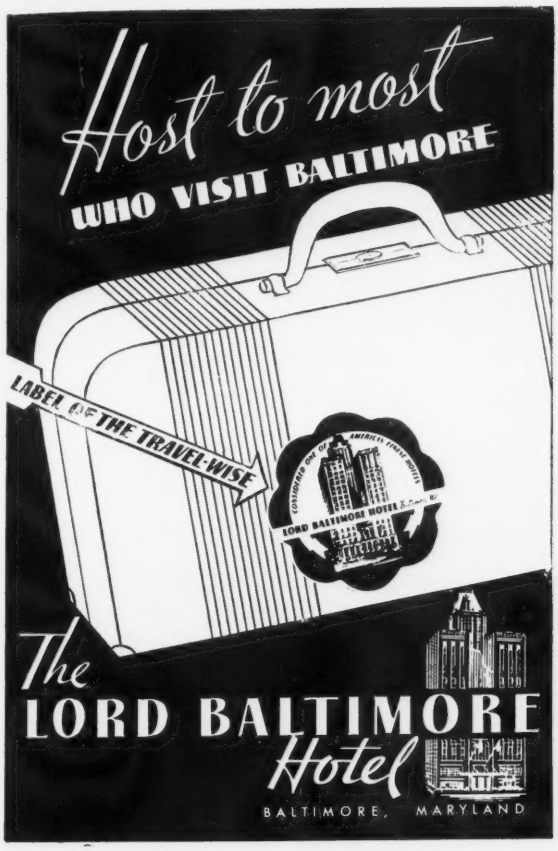
Hospitals Are Good Customers, Mr. Jobber--

for soaps, disinfectants, waxes—hundreds of items in your line. They are geared to progressive thinking—alert to equipment improvements. Show them something new, something practical, something essential which is also inexpensive, and you have an entree for other business that's a natural.

Our two portable hospital dispensers (No. 1032 with one spout, left, and No. 1033 with two spouts, right) are providing hundreds of jobbers with this real sales tool. Don't take our word for it. Write us for literature and see for yourself.

Bobrick Manufacturing Corporation

15 East 26th Street -:- New York, New York

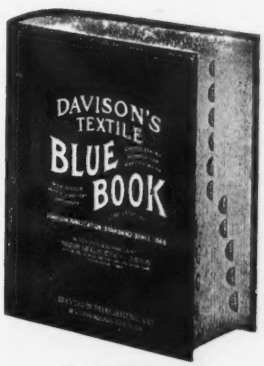


Textile Mills Need Soap!

NINE THOUSAND Textile Mills, Dyers, Finishers, Bleachers and printers in the United States and Canada are fully reported and give you a big market.

In addition 30,000 associated firms are listed and reported —dry goods commission merchants, yarn, cotton, linters, silk, rayon, waste, wool, rags, fibres, machinery, chemicals, supplies and other allied industries.

Issued annually— Supplement of New Mills and changes is sent to every subscriber free



New 74th year DeLuxe Office Edition $7.50

Thin Paper Handy Size $5.00

Salesmen's $4 Edition

Actual Photograph

Fourteen hundred pages in size, thumb indexed for quick reference, strongly bound and with information arranged for instant use, this volume will make money for your sales department.

DAVISON'S TEXTILE BLUE BOOK

"A Davison Publication — Standard Since 1866"

Executive, Sales and Production Offices

RIDGEWOOD - : - NEW JERSEY

Late?

Does your "routed" copy of SOAP reach your desk a week or more late? A personal subscription will eliminate this annoyance. You will get your copy *promptly*. It will be *yours*. Start this month.

Annual subscription: $3.00 *Domestic* $4.00 *Foreign*

MacNAIR-DORLAND CO.

254 W. 31st St. New York, N. Y.

Tale Ends

FROM Wall Street comes the "news" that Colgate-Palmolive-Peet will earn over $2.50 per common share for the full year, 1939, which figures not far from a fifty per cent increase in earnings over 1938. We also hear,—but not from Wall Street,—that there were a half dozen or so small soapers who bought C-P-P about as heavily as the law allowed back early in 1939. They have confided to us that they have no regrets.

* * *

Several thousand questionnaires have been sent out to manufacturers in the soap and sanitary products industries to check listings in the 1940 *Soap & Sanitary Chemicals* BLUE BOOK. Many of these questionnaires have not been returned to us,—but we'll bet our last dollar that about half of those who do not return questionnaires will write and ask us indignantly why they were not listed under so-and-so in the 1940 BLUE BOOK! It happens every year.

* * *

This is the season for sales conventions, — the time when the boss gets up and talks to the sales staff which has been brought in to the home office "from all parts of the country at great expense to the firm." It is the season when the poor salesmen have to sit there in that draft of hot-air while the boss tells them how to do things which he could never do himself.

* * *

New Year's resolutions we have always found distasteful. We unconsciously associate them with a dull headache and fur-coated tongue. Nevertheless, we feel constrained to urge each one of our subscribers to make at least one resolution now. When you receive an expiration notice on your *Soap* subscription, dash to the nearest check book and send in your renewal pronto! This way you will not miss an issue and will be sure of receiving your free copy of the BLUE BOOK.

NATURAL OIL SUBSTITUTES THAT MAKE YOU INDEPENDENT OF FOREIGN SOURCES

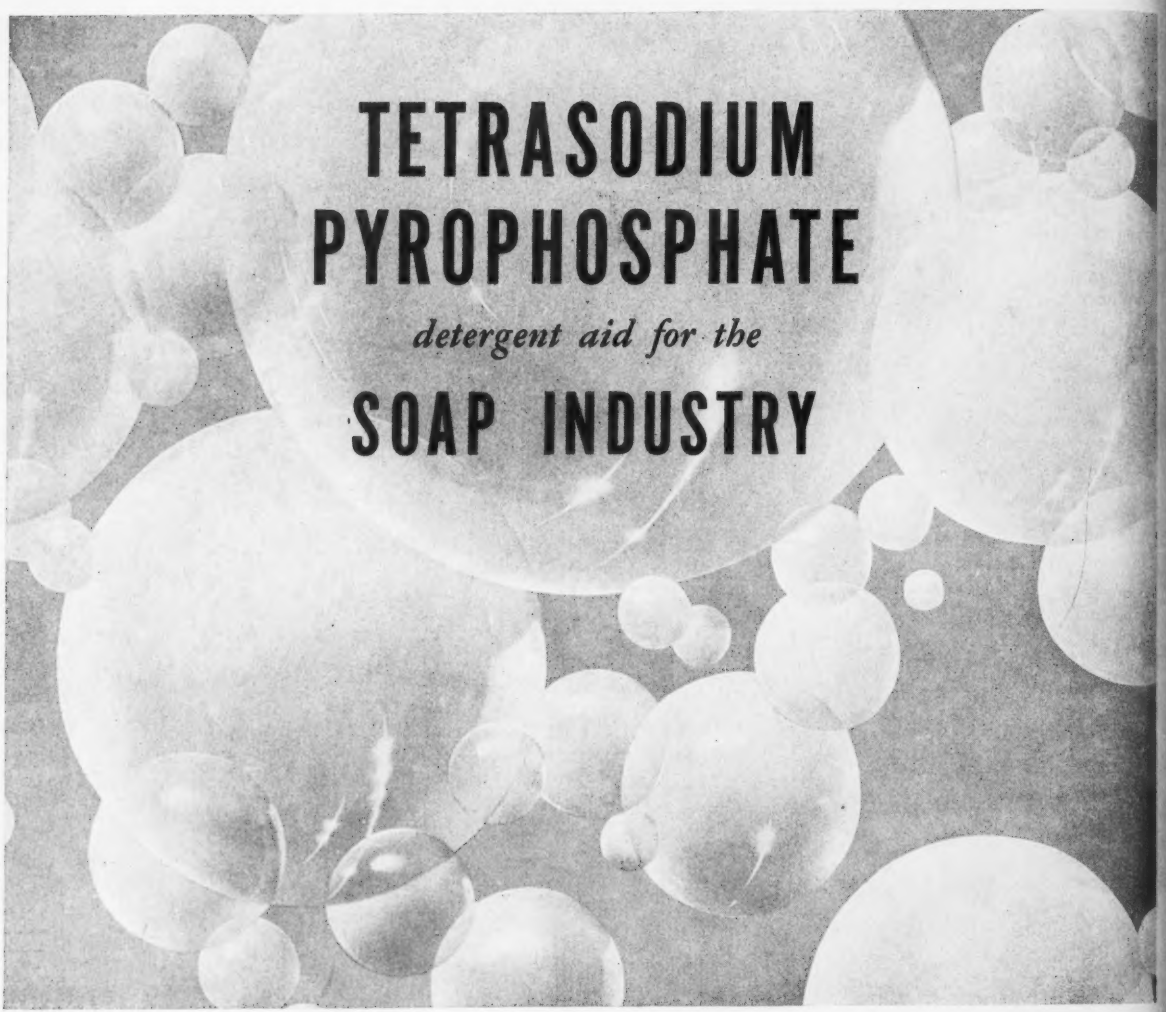
• For many years Givaudan has been preparing to help make soap manufacturers independent of certain imported low-priced natural oils.

Our laboratories have been constantly developing new and finer substitutes until today they rival in quality and efficiency the best of the natural oils. Many manufacturers have found them so satisfactory that they have been using them regularly—even while the natural products were available in sufficient quantities.

Now is the time to acquaint yourself with the advantages that Givaudan substitutes offer. They are reasonable in price and available in a wide variety. Our staff will gladly assist you in selecting those best suited to your special needs. Your request for prices, samples and more complete information will receive our prompt attention.

GIVAUDAN DELAWANNA, INC.

80 FIFTH AVENUE · NEW YORK, N. Y.



Tetrasodium pyrophosphate offers striking advantages for the manufacturer interested in a detergent with extraordinary cleansing, wetting, softening, dispersing and clarifying qualities.

Soaps containing tetrasodium pyrophosphate clean clothes shades whiter, keep colors fresh and bright, free garments from graying scum, leave tubs clean and ringless. These new soaps are kinder to the hands, gentler on fabrics, create an uprush of cleansing, sudsy bubbles even in hard water.

Tetrasodium pyrophosphate is manufactured from pure, elemental phosphorus produced at Monsanto, Tennessee —assuring uniform quality and availability at all times.

MONSANTO CHEMICAL COMPANY, Phosphate Division, St. Louis, U. S. A. District Offices: New York, Chicago, Boston, Detroit, Birmingham, Charlotte, San Francisco, Los Angeles, Montreal, London.

OTHER MONSANTO PRODUCTS

TRI SODIUM PHOSPHATE
cleansing agent, detergent

TETRA POTASSIUM PYROPHOSPHATE
soap builder, where pyrophosphate salt of very high solubility is desired

SANTOMERSE
wetting, penetrating and detersive agent

SOPANOX
retards rancidity and discoloration

MONSANTO CHEMICALS
SERVING INDUSTRY WHICH SERVES MANKIND